

# The Role of Athlete Competitiveness in High School Sport Specialization in the United States

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*Investigation performed at the University of Georgia, Athens, Georgia, USA*

**Background:** Sport specialization has been associated with increased injury and negative psychosocial effects on young athletes. With the continuing trend toward specialization, studies have begun to examine what motivates this decision (eg, building a skill, getting a scholarship). No study has directly assessed the personal characteristics underlying these stated reasons.

**Purpose/Hypothesis:** This study examined the role of athlete competitiveness (enjoyment of competition and competitive contentiousness) as a characteristic associated with propensity to specialize in the United States. We hypothesized that, at the high school level, athletes would be more likely to engage in sport specialization owing to enjoyment of competition versus competitive contentiousness.

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

**Methods:** We conducted an online survey of 975 high school athletes in the United States who were recruited via the Dynata research panel. Measures included a previously published sport specialization categorization (low, medium, high) and the 2 dimensions of the Revised Competitiveness Index (enjoyment of competition and competitive contentiousness). Also collected were athlete characteristics, sports played by the athletes, level of competition, and whether they planned to play sports in college. Analytical methods employed included cross-tabulations, multinomial logit, and ordinary least squares regression.

**Results:** Overall, 22.4% of the athletes reported a high, 34.8% reported a medium, and 42.9% reported a small level of specialization. No differences in the distribution of sport specialization by sex or age were observed; however, athletes who definitely planned to play in college were significantly more likely to have a high level of specialization ( $P < .001$ ). Enjoyment of competition was associated with greater specialization (beta = .196;  $P < .001$ ), whereas competitive contentiousness was associated with lower levels of specialization (beta =  $-.299$ ;  $P < .001$ ). These findings were robust to all 3 different analytical methods we employed.

**Conclusion:** Study findings indicated that, while athlete competitiveness is associated with sport specialization, the nature of that competitiveness determined the association. Being an argumentative contrarian may predispose athletes to lower levels of sport specialization, whereas enjoying competition may encourage higher levels of specialization.

**Keywords:** athlete competitiveness; enjoyment of competition; sport motivation; sport specialization

Sport specialization, defined as “intentional and focused participation in a single sport for a majority of the year that restricts opportunities for engagement in other sports and activities,”<sup>11</sup> has been associated with negative physical (eg, overuse injuries) and emotional (eg, burnout) outcomes, especially for athletes aged <18 years.<sup>6,11</sup> There is also a concern that specialization will lead to increased dropout from sports, which may be associated with a more sedentary lifestyle.<sup>1</sup> In response to these and other concerns, several recommendations have been made regarding specialization.<sup>2</sup> Despite these outcomes and

recommendations (eg, limiting participation in terms of months per year or hours per week as well as off-season activities involving coaches and/or program equipment), medium-to-high levels of specialization as measured using 3 self-reported conditions continue to be found in roughly two-thirds of young athletes,<sup>3,12</sup> with the majority of athletes believing they will not sustain these potential injuries.<sup>5</sup>

Given the persistence of specialization, studies have begun to examine what motivates athletes to specialize.<sup>16</sup> Some scholars have suggested that external or controlled factors (eg, pressure to play at a higher level from a coach and/or parent) play a role in the decision to specialize,<sup>4</sup> while recent studies have suggested that many athletes specialize for more intrinsic or autonomous reasons, such

as the hope of improving performance in the athlete's chosen sport or creating opportunities that allow them to continue to play.<sup>5,9,23</sup> The focus of such studies tends to be the stated reason for specialization rather than the underlying traits or dispositions that produce those reasons. One such trait proposed by popular literature is athlete competitiveness.<sup>15,22</sup> Competitiveness can be defined as the "desire to win in interpersonal situations"<sup>8</sup> and has been hypothesized to have 2 components as measured using the Revised Competitiveness Index: an enjoyment of competition and the tendency to be contentious.<sup>10</sup> Enjoyment of competition refers to the satisfaction or pleasure an individual receives from engaging effectively in competitive situations, and competitive contentiousness refers to a preference for challenging or arguing with others even if it produces conflict or hurt feelings.<sup>10</sup> As enjoyment of competition and competitive contentiousness are distinct dimensions of competitiveness, it is possible that a given athlete can be high (or low) on both dimensions. Enjoyment of competition has been associated with intrinsic motivation for the activity (eg, learning new skills, experiencing cooperation, and enhancing self-esteem) and higher levels of sportsmanship, whereas competitive contentiousness has been associated with extrinsic motivation (eg, enhancing social status or obtaining a college scholarship or professional career) and lower levels of sportsmanship.<sup>7,20</sup>

It is plausible that higher levels of competitiveness regardless of type are associated with higher levels of sport specialization. Although popular literature would suggest that competitive contentiousness drives specialization,<sup>15,22</sup> this belief has not been confirmed in athlete-centric studies. This is important because it will better inform interventions designed to mitigate the negative consequences associated with this behavior. Competitive contentiousness is related more to the hypercompetitive environment that is believed to force specialization to keep up with peers or satisfy coach and/or parent demands and, thus, could be considered the type of competition associated most closely with the decision to specialize. Yet enjoyment of competition is aligned most closely with an individual's desire to be good at something, a reason given by athletes for sport specialization in a recent study.<sup>5</sup> Thus, existing literature has examined the connection between competitiveness and reasons for playing a sport. No academic study, however, has examined the assumption that an athlete's competitiveness is associated with sport specialization directly. Understanding the role of competitiveness and type of competitiveness in the decision to specialize would support a more relevant and effective approach to managing the negative physical and emotional outcomes that have been associated with sport specialization.

This study addressed this gap by exploring the role of competitiveness in the athlete's decision to specialize. The hypothesis was that athletes' competitiveness would affect their sport specialization. Specifically, athletes with higher levels of enjoyment of competition will be more likely than athletes with higher levels of competitive contentiousness to engage in sport specialization.

## METHODS

### Data Collection

The study protocol was approved by the Human Research Protection Program at the University of Georgia. The data were collected in May 2019 using an online survey, with high school athletes in the United States recruited using the Survey Sampling International (now Dynata; <https://www.dynata.com/>) research panel, a volunteer panel of >62 million people. The initial sample was selected to represent the US household population with high school-aged children, using loose quotas to allow for differences between the general household and the household with athletes. A power analysis using the low end of the small, but not trivial, effect size (0.10) with alpha of .05 revealed a sample target of 1073 participants.

To qualify for the study, the panel members must have had at least 1 high school athlete in their household. Consent for the study was obtained from the parents who were the panel members as they entered the online survey. Parents were asked to identify how many of their children were high school athletes. If the response was >1, parents were asked to select the oldest high school athlete. If this method did not identify a single athlete, they were asked to select the athlete who competed at the highest level. If that did not identify a single athlete, they were asked to pick 1 of their oldest, most competitive, high school athletes. This method ensured that 1 athlete per household completed the survey.

The selected high school athletes were then asked to complete the online survey without assistance from their parents. When high school athletes began their survey, they were informed of the study and asked for their assent as minors. They also reported the sports they played and whether they planned to play sports in college.

### Measures

**Sport Specialization.** Sport specialization was measured using the 3 items from Jayanthi et al<sup>12</sup> to identify the level of specialization (low, medium, or high). The items were (1)

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I have quit other sports to focus on 1 sport, (2) I train more than 8 months out of the year in 1 sport, and (3) I consider my primary sport more important than other sports. A count of the “yes” responses was used to identify the athlete’s self-classified degree of specialization<sup>12</sup>: high (“yes” to 3 items), medium (“yes” to 2 items), or low (“yes” to 1 item). While there are current efforts to address the limitations of this scale,<sup>14</sup> it is used widely for assessing sport specialization. A sport specialization factor was derived from the 3 specialization items using principal components analysis as the extraction method.

**Competitiveness.** Competitiveness was measured using the psychometrically valid Revised Competitiveness Index, originally developed to assess a desire to win in situations involving others.<sup>10</sup> The revised index has 2 dimensions: enjoyment of competition and competitive contentiousness. Enjoyment of competition was measured on a 5-point scale (strongly agree to strongly disagree) for 7 items such as I like competition, I am a competitive individual, I enjoy competing against an opponent, and I get satisfaction from competing with others. Competitive contentiousness was measured on a 5-point scale (strongly agree to strongly disagree) for 5 items such as I try to avoid arguments, I will do almost anything to avoid an argument, and I often remain quiet rather than risk hurting another person. The items were recoded so that a high value reflected a high level of competitive contentiousness to allow for more intuitive interpretation. Similar results were obtained without recoding the items. The enjoyment of competition measure ranged from a low of 7 to a high of 35. The competitive contentiousness scale ranged from a low of 5 to a high of 25. Cronbach alpha exceeded the recommended threshold (enjoyment of competition, 0.858; competitive contentiousness, 0.818). For the cross-tabulation analysis, binary indicators of high versus low were constructed using a median split for the 2 competitiveness measures.

### Statistical Analysis

Descriptive analyses such as frequency distributions, means, and SDs were used to summarize the characteristic, competitiveness, and sport specialization measures. Correlations were used to examine the bivariate relationships among variables of interest listed earlier. Given the ordinal nature of sport specialization, the relationships between competitiveness (enjoyment of competition and competitive contentiousness) and sport specialization were examined using a cross-tabulation. Two cross-tabulation analyses were conducted, 1 for each of the subdimensions of competitiveness. As a robustness check on this bivariate analysis, a multinomial logit was conducted with sport specialization as the dependent variable and enjoyment of competition and competitive contentiousness as the independent variables. As a final check, an ordinary least squares (OLS) regression was estimated using a sport specialization factor score identified using categorical principal components analysis (CATPCA) as the dependent variable. All analyses were conducted in

TABLE 1  
Sample Characteristics (N = 975)<sup>a</sup>

Variable	Value
Athlete family characteristics	
Household income, US\$	
Mean $\pm$ SD	81,413 $\pm$ 56,202
Median	62,500
Region of US	
Northeast	244 (25)
Midwest	234 (24)
South	331 (34)
West	166 (17)
Level of competition <sup>b</sup>	
Select/travel	280 (28.4)
Varsity team	522 (53.5)
Junior varsity/freshman team	436 (44.7)
Community/recreational level	86 (8.8)
Athlete demographics	
Female	501 (51.4)
Male	474 (48.6)
Age, y, mean $\pm$ SD	16.1 $\pm$ 1.22

<sup>a</sup>Data are reported as n (%) unless otherwise indicated. US, United States.

<sup>b</sup>Percentages add to >100%, as 31.6% of athletes competed at > 1 level.

SPSS Version 27 (IBM Corp). The alpha for all analyses was .05.

## RESULTS

### Sample Characteristics

A total of 1070 surveys were completed by the high school athletes. There were 95 athletes (8.9%) who did not answer all 3 sport specialization questions and were removed from the analysis. These respondents were similar on all measured characteristics, with the exception of household income. The athletes who did not answer all sport specialization questions tended to come from households with lower incomes than did the remaining respondents (\$68,000 vs \$81,000;  $t = -2.461$ ;  $P = .014$ ).

Among the 975 retained athletes, the average household income was \$81,413 (compared with \$87,684 for the United States as a whole<sup>21</sup>), with a minimum of \$18,500 and a maximum of \$199,999. The median household income was \$62,500, compared with \$67,521 for the United States in 2020.<sup>21</sup> Athletes represented all US census regions (25% Northeast, 24% Midwest, 34% South, 17% West). There were no missing data for the other variables of interest (Table 1). In terms of level of competition, 28.4% competed on a select/travel team; 53.3%, on a varsity team; 44.7%, on a junior varsity/freshman team; and 8.8%, at the recreational or community level. The athletes were 51.4% female, with an average age of 16.1 years. The top 5 sports in which these athletes participated were team sports: basketball, 27.6%; football, 25.1%; baseball/softball, 21.6%; soccer,

TABLE 2  
Sport Specialization by Sex, Age, and Athlete Expectations for Playing Sports in College<sup>a</sup>

Specialization	Overall, n (%)	Sex		Age in Years				Play in College?		
		Male	Female	14	15	16	17	Yes	Maybe	No
Low	418 (42.9)	41.6	44.1	46.9	40.8	44.7	42.9	30.8	51.4	62.3
Medium	339 (34.8)	35.7	33.9	30.9	35.9	36.4	40.1	41.3	32.8	18.9
High	218 (22.4)	22.8	22.0	22.2	23.4	18.9	17.0	27.9	15.8	18.8

<sup>a</sup>Data are reported as percentages unless otherwise indicated.

17.4%; and volleyball, 11.6%. Of the sample, 22% participated in more individual sports like cross country, track, golf, bowling, wrestling, tennis, or swimming. Of the athletes who planned to attend college, most (50.4%) indicated that they hoped to play a sport in college, with another 34.0% indicating that they might want to play in college.

### Distribution of Sport Specialization

In this national sample of high school athletes, 22.4% of athletes reported a high level of sport specialization, whereas 42.9% of athletes reported a low level of sport specialization (Table 2). No differences in the distribution of sport specialization by sex ( $\chi^2_{(2)} = 0.652$ ;  $P = .722$ ) or age ( $\chi^2_{(6)} = 4.402$ ;  $P = .622$ ) were observed. There was a significant difference by expectations for playing in college ( $\chi^2_{(4)} = 67.820$ ;  $P < .001$ ), with athletes who definitely planned to play in college showing the strongest evidence of specialization.

### Descriptive Statistics and Correlations Between Variables of Interest

Enjoyment of competition ranged from a low of 7 to a high of 35, with a mean of 26.4 and SD 5.9. Competitive contentiousness ranged from a low of 5 to a high of 25, with a mean of 13.7 and SD of 4.5. Enjoyment of competition and competitive contentiousness were positively correlated ( $R = 0.350$ ;  $P < .001$ ). Enjoyment of competition was positively correlated with sport specialization ( $R = 0.078$ ;  $P < .001$ ). Competitive contentiousness was correlated negatively with sport specialization ( $R = -0.148$ ;  $P < .001$ ). Table 3 contains the descriptive statistics and correlations.

### The Role of Athlete Competitiveness in Specialization

As shown in Table 4, enjoyment of competition was significantly and positively related to sport specialization ( $\chi^2_{(2)} = 22.008$ ;  $P < .001$ ) meaning that higher levels of enjoyment of competition were associated with higher levels of sport specialization. Inspecting the distributions, the largest difference was observed between athletes high and low in enjoyment of competition was a shift from the low to the medium sport specialization category. Athletes who were high in enjoyment of competition were 12.5 points lower in the low specialization category (36.5% vs 49.0% for low

TABLE 3  
Correlations Between Variables of Interest

Variable	Mean $\pm$ SD	Correlation	
		(1)	(2)
(1) Enjoyment of competition	26.4 $\pm$ 5.9		
(2) Competitive contentiousness	13.7 $\pm$ 4.5	0.350 <sup>a</sup>	
(3) Sport specialization	1.8 $\pm$ 0.8	0.078 <sup>b</sup>	-0.148 <sup>a</sup>

<sup>a</sup> $P < .01$ .

<sup>b</sup> $P < .05$ .

TABLE 4  
Cross-Tabulation of Competitiveness and Sport Specialization<sup>a</sup>

Specialization level	Enjoyment of Competition <sup>b</sup>		Competitive Contentiousness <sup>c</sup>	
	Low	High	Low	High
Low	49.0	36.5	37.0	49.7
Medium	28.1	41.7	37.2	31.9
High	22.9	21.8	25.8	18.4

<sup>a</sup>Data are reported as percentages.

<sup>b</sup> $\chi^2_{(2)} = 22.008$ ;  $P < .001$ .

<sup>c</sup> $\chi^2_{(2)} = 16.858$ ;  $P < .001$

enjoyment of competition) and 13.6 points higher in the medium category (41.7% vs 28.1% for low enjoyment of competition).

Competitiveness contentiousness was significantly and negatively related to sport specialization ( $\chi^2_{(2)} = 16.858$ ;  $P < .001$ ), meaning that higher levels of competitive contentiousness were associated with lower levels of sport specialization. Inspecting the distributions, the largest difference was observed between athletes high and low in competitive contentiousness in the high and low sport specialization categories. Low specialization represented 37.0% of athletes low in competitiveness contentiousness and 49.7% of athletes high in this trait. High specialization represented 25.8% of athletes low in competitive contentiousness and 18.4% of athletes high in this trait.

In the robustness check, the data did not meet the proportional odds assumption of ordinal regression as the test of parallel lines was significant and the odds ratio from a separate binary logistic regression for each level of the sport

TABLE 5  
Multinomial Logit Model Results

Variable	B	SE	Exp(B)	P Value
High vs low specialization				
Enjoyment of competition	0.058	0.016	1.060	<.001
Competitive contentiousness	-0.118	0.021	0.889	<.001
Intercept	-0.569	0.408		.163
Medium vs low specialization				
Enjoyment of competition	0.063	0.014	1.065	<.001
Competitive contentiousness	-0.065	0.018	0.937	<.001
Intercept	-0.972	0.360		.007
Nagelkerke $R^2$	0.056			
Pearson $\chi^2$	639.459	$P = .214$	$df = 612$	
-2 log likelihood				
Intercept-only model	1195.641			
Final model	1146.697			
$\chi^2$	48.944	$P < .001$	$df = 4$	

specialization measure produced different coefficients. As a result, multinomial logit was used for the robustness check. The model containing the 2 competitiveness measures was significant (-2 log likelihood: intercept-only model, 1195.641; final model, 1146.697;  $\chi^2_{(4)} = 48.944$ ;  $P < .001$ ). The model fit the data well (Pearson  $\chi^2_{(612)} = 639.459$ ;  $P = .214$ ). When compared with the low specialization category, athletes in the high specialization category had significantly higher levels of enjoyment of competition (Exp[B] = 1.060;  $P < .001$ ) and significantly lower levels of competitive contentiousness (Exp[B] = 0.889;  $P < .001$ ). The same was true for athletes in the medium specialization category compared with the low specialization category (enjoyment of competition: Exp[B] = 1.065;  $P < .001$ ; competitive contentiousness: Exp[B] = 0.937;  $P < .001$ ). Table 5 contains the results of the multinomial logit model.

As the dependent variable in the OLS regression, a single sport specialization factor was extracted. Factor loadings were all >0.6. The factor explained 51.3% of the variance in the sport specialization items and had an eigenvalue of 1.539. A 1-way analysis of variance confirmed a significant relationship between the specialization factor score and the low, medium, and high categories of specialization. A mean specialization score of -1.01 was observed for low specialization; 0.39, for medium specialization; and 1.32, for high specialization. Thus, this factor provided a reasonable representation of sport specialization. Table 6 contains the factor loadings and results of the analysis of variance.

In the OLS regression, enjoyment of competition was associated positively with sport specialization (beta = .196;  $P < .001$ ), whereas competitive contentiousness was associated negatively with sport specialization (beta = -.299;  $P < .001$ ). Table 7 contains the results of this analysis. The assumptions of OLS regression were met. These results provided additional confirmation of the finding that the

TABLE 6  
CATPCA and Measure Result<sup>a</sup>

Specialization Item (from Jayanthi et al <sup>12</sup> ) <sup>b</sup>	Factor Loading
I have quit other sports to focus on 1 sport.	0.670
I train more than 8 months out of the year in 1 sport.	0.706
I consider my primary sport more important than other sports.	0.769
Specialization Level	Specialization Factor, Mean $\pm$ SD <sup>c</sup>
Low	-1.01 $\pm$ 0.52
Medium	0.39 $\pm$ 0.04
High	1.32 $\pm$ 0.00

<sup>a</sup>CATPCA, categorical principal components analysis.

<sup>b</sup>Percentage of variance explained, 51.3%; eigenvalue, 1.539.

<sup>c</sup> $P < .001$  (analysis of variance) for medium vs high, low vs high, and low vs medium.

athletes' enjoyment of competition was associated with higher levels of specialization, whereas their competitive contentiousness was associated with lower levels of specialization. Overall, the athletes' competitiveness was significantly associated with sport specialization.

## DISCUSSION

This study was the first to examine the association between type of competitiveness and sport specialization. The overarching finding of this study was that athletes' competitiveness influences sport specialization, although the direction of that influence depends on the type of competitiveness. Having a higher level of enjoyment of competition was associated with higher likelihood of specialization, while having a higher level of competitive contentiousness was associated with a lower likelihood. These findings were robust to 3 methods (ie, cross-tabulations, multinomial logit, and OLS regression). The findings from this study suggested that athletes who gain satisfaction or pleasure from an ability to perform and compete at a higher level and seek to do so as long as possible are more likely to specialize than athletes who enjoy the conflict or "win at all costs" mentality.

These findings are consistent with those of previous descriptive studies suggesting that more intrinsic or autonomous motivation is associated with higher levels of specialization.<sup>5,20</sup> Viewed through the lens of these findings, sport specialization appears to be the outcome of desirable characteristics such as sportsmanship, cooperation, and self-esteem.<sup>7,20</sup> This view is consistent with findings regarding the importance of intrinsic or autonomous reasons for specializing,<sup>5</sup> as well as early studies of specialization.<sup>9,23</sup> However, it stands in contrast with studies highlighting the negative outcomes of specialization.<sup>1,2,6,11</sup>

The primary contribution of this study is a shift from stated reasons for specialization to underlying traits or

TABLE 7  
Ordinary Least Squares Regression Results<sup>a</sup>

Variable	B	SE	Beta	P Value	Variable Inflation Factor
Enjoyment of competition	0.033	0.006	.196	<.001	1.140
Competitive contentiousness	0.051	0.007	-.229	<.001	1.140

<sup>a</sup> $R^2 = 0.059$ ;  $F = 30.800$ ;  $P < .001$ .

distributions that produce the motivation to specialize. From this perspective, the study builds on the study by Brooks et al<sup>5</sup> of 974 athletes that found the 3 most important factors in an athlete's decision to specialize were "getting better at your sport," "having fun," and "being physically active." These stated reasons are consistent with enjoyment of competition as an underlying trait.

Perhaps engaging in sport specialization is a method used by athletes who want to develop their ability to compete.<sup>5</sup> When viewed through this lens, sport specialization is associated with many attributes that are desirable for athletes to have and, therefore, may be a healthy pursuit.<sup>16</sup> In comparison, high school athletes with higher levels of competitive contentiousness showed significantly lower levels of specialization. Perhaps such athletes are not as interested in developing their ability to compete in a single sport. For them, sport specialization might mean fewer opportunities to engage in competition (ie, conflict in their definition). The findings of this study also confirm that competitiveness is not a monolithic construct. Enjoyment of competition and competitive contentiousness operate on the specialization decision in different ways that are congruent with findings from past studies.

The findings suggested a way to reduce specialization is to instill competitive contentiousness in a larger number of athletes. With the association between competitive contentiousness, extrinsic motivation, and lower levels of sportsmanship, such a recommendation does not seem advisable. Instead, the positive motivations that influence higher levels of specialization could lead to a different question: how might the likelihood of negative specialization outcomes be reduced without discouraging the athletes' goal of building their ability to compete driven by the enjoyment of competition? Rather than discouraging specialization, perhaps the focus could be on altering the way in which athletes specialize consistent with recommended guidelines.<sup>2</sup> One such example is promoting sport transfer as a theorized way of promoting multisport participation.<sup>20</sup> For example, a soccer athlete who plays basketball will still learn about ball movement, team positioning, and rebounding as they play basketball given the similarities between the sports. Perhaps there are other options for athletes to improve performance in the chosen sport while instilling variety in movement and maintaining a high level of enjoyment.

Given its association with a range of negative outcomes (eg, overuse injury, burnout, and sports dropout), sport specialization is an important area of study and focus.<sup>13</sup> Despite arguments against specialization, recommendations to reduce its occurrence are not likely to have the

desired influence until we understand the motivations behind sport specialization.<sup>19</sup> In response to this call, this study examined competitiveness of high school athletes as a personality trait that motivates sport specialization. The national distribution of sports specialization in this study was similar to findings in previous research.<sup>5</sup>

### Limitations

The study had limitations. It was a cross-sectional study so we cannot speak to causal relationships. The study examined current high school athletes and did not capture those athletes who dropped out of their sports before the study. A study of dropouts might reveal different motivations. While a range of team and individual sports were included in the sample, team sports were a much larger percentage of the sample than were individual sports. Future studies could examine whether these findings hold for type of sport played. This study did not consider the role of race/ethnicity, sex, socioeconomic status, or school size.<sup>17</sup> Future studies could examine how these factors influence the sport specialization decision. This study also did not examine the role of coaches and/or parents in encouraging athletes to limit participation in other sports.<sup>16,18</sup> Finally, the operationalization of sport specialization used here had limitations. For example, the 3-item measure used in this study did not account for athletes who never played >1 sport.<sup>11</sup> After we had collected data for our study, Miller et al<sup>14</sup> suggested the inclusion of a fourth item to identify these athletes. This item was not available to this study. In addition, the high, medium, and low categories limit the types of analyses that can be conducted. While the study attempted to address this limitation in the robustness checks, future research should reexamine the concept and its measurement.

### CONCLUSION

High school athletes who had a higher enjoyment of competition were more likely to specialize in a single sport while athletes with higher competitive contentiousness were less likely to specialize. Clinicians should recognize that many high school athletes choose to specialize and do so out of enjoyment of competition. While sport specialization has been associated with negative physical and emotional outcomes for young athletes,<sup>6,11</sup> this study suggested that these athletes are specializing for positive reasons that are associated with intrinsic motivation and sportsmanship.<sup>7,22</sup> Based on these findings, clinicians should promote a balanced approach that encourages athletes to enjoy

competition and build their skill while lessening the identified negative outcomes associated with sport specialization.

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