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Title: Single Sport Specialization in Youth Sports: A Survey of 3,090 High School, Collegiate, and Professional Athletes

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Objectives: Youth participation in organized sports in the United States is rising, with many athletes focusing on a single sport at an increasingly younger age. There is considerable debate regarding the rationale, optimal timing, injury risk, and the psychosocial health of a young athlete specializing early in a single sport. The purpose of our study was to compare youth single sport specialization in high school (HS), collegiate, and professional athletes with respect to the age of specialization, the number of months per year of single sport training, and injury attributed by the athlete to specialization.

Methods: A survey was distributed to HS, collegiate and professional athletes prior to their yearly pre-participation physical exam. Demographic information, details of current sport commitment, and future athletic plans were collected. Athletes were asked if they had chosen to specialize in only one sport during their childhood/adolescence, and data was then collected pertaining to when, how, and why this decision was made. Continuous data was analyzed using one-way ANOVA analysis and categorical variables were compared using chi-square analysis.

Results: A total of 3,090 athletes completed the survey (503 HS, 856 collegiate, and 1,731 professional athletes). 46.3% of HS athletes, 67.7% of collegiate athletes, and 45.9% of professional athletes specialized to play a single sport during their childhood/adolescence ($p < 0.00001$). Single sport specialization in these groups occurred at a younger age in the HS athletes (12.7 ± 2.4 years old), compared to the college (14.8 ± 2.5 years old) and professional athletes (14.06 ± 2.8 years old) ($p < 0.001$). At the age of specialization, collegiate athletes spent more months per year training for their sport (10.03 ± 2.64 months), compared to HS (8.5 ± 3.4 months) and professional athletes (8.3 ± 3.5 months) ($p < 0.0001$). A lower percentage of professional athletes believed that specialization helped them to play at a higher level (61.7%) compared to HS (79.7%) and collegiate athletes (80.6%) ($p < 0.0001$). Current HS (39.9%) and collegiate athletes (42.1%) recalled a statistically higher incidence of sport-related injury than current professional athletes (25.4%) ($p < 0.0001$). Notably, only 22.33% of professional athletes said they would want their own child to specialize to play only one sport during childhood/adolescence.

Conclusion: In our study, 46.3% of current high school athletes specialized to play only one sport. Additionally, high school athletes specialized, approximately two years earlier than collegiate and professional athletes surveyed. This trend towards earlier sport specialization is concerning without evidence that early specialization provides any advantage for athletic advancement with potential predisposition towards higher injury risk.

Summary of Youth Single Sport Specialization Survey Results

	High School	Collegiate	Professional	p-value
# Surveys	503	856	1731	
# sports represented	23	17	2	
Age (years)	15.34 ± 1.43	19.56± 1.31	23.55 ± 8.56	<0.001
What age did you begin playing in competitive sports?	7.48 ± 3.05	7.62 ± 3.23	6.02± 2.23	<0.001
Did you quit sports to focus on one sport?	Y (45.17%)	Y (67.66%)	Y(45.95%)	<0.001
If yes, at what age did you quit other sports?	12.69± 2.37	14.79± 2.45	14.74 ± 2.40	<0.001
Did you ever sustained injury that you attributed to specializing to one sport?	Y(39.02%)	Y(42.27%)	Y25.36%)	<0.001
Do you think specializing to play one sport helps the athlete play at a higher level?	Y(79.71%)	Y(80.63%)	Y(61.69%)	<0.001
Do you want your children to specialize to play only one sport during their childhood/adolescence?	Y(30.59%)	Y(27.36%)	Y(22.33%)	<0.001