



## A CROSS-SECTIONAL STUDY OF SPORTS-RELATED ANXIETY AMONG ADOLESCENT ATHLETES: BASED ON SPORTS TYPE AND PARTICIPATION LEVEL

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### Abstract

*This study systematically assesses anxiety and sub-scales of anxiety patterns in adolescent athletes aged 9-14 years, focusing on the influence of sports type (individual vs. team) and level of participation (school-level vs. district & above). Using a 2x2 factorial design, the study sampled 534 athletes from Assam and Gujarat using a convenience sampling method. The Sports Anxiety Scale-2 (SAS-2) was used to assess somatic anxiety, concentration disruption, and worry. The results show that the level of participation and sport type have a substantial impact on anxiety experienced related to sports. Due to heightened personal accountability, athletes participating in individual sports reported higher levels of somatic anxiety, worry, and concentration disruption than those participating in team sports. Furthermore, compared to athletes participating at the district and higher levels, school-level athletes displayed higher levels of overall anxiety, which may indicate that athletes may acquire coping strategies as they advance to more competitive stages. In order to safeguard young athletes' mental health, the study's findings emphasize the necessity of specialized psychological care that takes into account the unique demands of a specific sport and the level of competition.*

**Keywords:** Adolescent athletes, Sports Type, Competition Level, Anxiety, and Sports Anxiety Scale-2

### Introduction

The number of children and adolescents participating in organized sports programs has significantly increased globally in recent decades. This trend is a reflection of the increasing awareness that sports as a medium can help young athletes develop socially and psychologically in addition to their physical health. Early participation in structured physical activity has become more and more important in national and worldwide programs as a preventive measure against childhood obesity, social separation, and sedentary lifestyles (Eime et al., 2013; Bailey et al., 2015). Schools, sports academies, and community clubs have thereby increased the range of sports they provide, catering to all age groups. Though the advantages of early sports participation are widely



established, a recent study of DiFiori et al., (2014) indicates that participation, particularly in competitive settings, may also expose young athletes to psychological pressures related to performance, such as anxiety and emotional stress. A more thorough investigation is required due to this duality of influence, especially as the pressures of competition rise. It is well known that playing competitive sports as a youth has several advantages, such as improving physical fitness, fostering discipline, and developing social skills like cooperation and teamwork. Frequent involvement in organized sports has been associated with enhanced motor abilities, cardiovascular health, and general physical literacy in developing youngsters (Feigenbaum et al., 2009; Janssen & LeBlanc, 2010). Outside of the physical realm, sports environments are frequently useful for teaching time management, perseverance, and rule compliance- all of which are essential life skills (Fraser-Thomas, Cote, & Deakin, 2005). In particular team team-based sports encourage cooperation and support among peers, which promotes a sense of social integration and belonging. However, playing competitive sports exposes young athletes to a variety of psychological stressors in addition to these benefits. Particularly in high-stakes competitive settings, the pressure to succeed, the fear of failing, and expectations from peers, parents, and coaches can all lead to elevated stress levels and anxiety associated with sports (Nicholls et al., 2016). Adolescents may internalize pressure to perform, which might show up as physical problems or a diminished interest in the sport. Additionally, if supporting coaching and psychological education are not provided, competition-related evaluation and public scrutiny can negatively impact mental health (Sagar, Lavalley, & Spray, 2007). Therefore, it is important to consider the psychological demands that competitive sports place on young athletes, even while they present significant development opportunities. Youth participation in competitive sports has increased worldwide, with varying intensity based on region, sport type, and competitive level of competition. The International Olympic Committee and Allianz (2023) report that less than 20% of youth worldwide participate in more than five hours of sports each week, frequently due to financial and social constraints. Nearly 47% of Australian children aged 0-14 participate in organized sports every week (Australian Sports Commission, 2023), compared to 54.1% of children aged 6-17 in the United States who did so in the previous year (CDC, 2022). Understanding how sport causes anxiety depends on these participation patterns.

Anxiety is described as “A trait and/or state-like responses to a stressful sport-related situation, which the individual perceives as potentially stressful, resulting in a range of cognitive appraisals, behavioral responses, and/or physiological arousals” by Ford et al., (2017). Include various sub-components such as: somatic anxiety defined by Gelenberg, (2000) as “Somatization refers to the phenomenon in which patients experience and express their feelings or emotions through physical complaints and distress”, worry-



“Worry is a chain of thoughts and images, negatively affect-laden and relatively uncontrollable. The worry process represents an attempt to engage in mental problem-solving on an issue whose outcome is uncertain but contains the possibility of one or more negative outcomes. Consequently, worry relates closely to the fear process.” (Borkovec et al., 1983) and concentration disruption. Young athletes are vulnerable to anxiety associated with sports because of a confluence of environmental, social, and developmental factors. People experience fast cognitive and emotional changes in late childhood and early adolescence, which increases their sensitivity to criticism and failure (Gould et al., 1993). Stress levels might be further increased by parental pressure to perform well, which is frequently driven by expectations from family or scholarship prospects (Harwood & Knight, 2015). In a similar vein, coaches' performance-based expectations and selection standards may inadvertently make young athletes more self-conscious and afraid of receiving a poor grade (Sagar & Lavalley, 2010). Managing such pressures is more challenging for this age group due to their lack of coping abilities, especially in competitive situations. These elements work together to make people more susceptible to anxiety symptoms, which can harm their performance and long-term mental health. Numerous recognized psychological theories and approved assessment instruments serve as the foundation for the research of sport anxiety in young athletes. According to the Multidimensional Anxiety Theory (MAT), anxiety can affect performance in two ways: cognitive (such as worry and negative expectations) and somatic (such as tense muscles and elevated heart rate) (Martens et al., 1990). This is further supported by the Catastrophe Theory, which holds that when somatic arousal and cognitive anxiety surpass an ideal threshold, performance might decline significantly (Hardy, 1990). A commonly used tool for measuring sport-specific trait anxiety, especially in young and adolescent athletes aged 9 to 14 years, is the Sports Anxiety Scale-2 (SAS-2). According to Smith et al., (2006), it evaluates three primary areas: somatic anxiety, concentration disruption, and worry. The SAS-2 is often used in cross-sectional designs that compare sport type and competitive level, since it has shown good psychometric qualities. Together, these theories and resources provide a strong basis for comprehending the intricate relationship between psychological pressures and young athletes' performance results in both individual and team sports.

Previous literature suggests that young athletes' anxiety triggers for individual and team sports are very different, since each discipline has different psychological and social requirements. Because in individual sports, athletes are alone responsible for their performance, sports like gymnastics, swimming, or tennis frequently experience increased self-focus, performance pressure, and fear of failure (Martens et al., 1990; Hanton, Mellalieu, & Hall, 2004). According to studies, these athletes are more likely to experience pre-competition anxiety and somatic symptoms like nausea or tense muscles,



and they frequently report higher levels of cognitive anxiety brought on by internal pressure and the lack of shared responsibility (Kristiansen et al., 2008; Neil et al., 2011). On the other hand, social appraisal and interpersonal dynamics are major anxiety triggers for athletes participating in team sports like basketball, volleyball, or football. These include role ambiguity within the team structure, worries about coaching choices, team selection, and the fear of disappointing colleagues (Grossbard et al., 2009; Tamminen & Crocker, 2013). Team environments frequently bring peer-related pressures and group-based expectations, even though they may disperse individual accountability (Nicholls & Polman, 2007). According to some research, athletes participating in a team sport may have lower trait anxiety than those participating in individual sports, but they may nonetheless report higher levels of state anxiety in competitive, high-stakes situations because of team-based consequences (Woodman & Hardy, 2003). Understanding these sport-specific anxiety triggers is critical for tailoring psychological interventions that address the unique mental demands of team versus individual sport participation.

Along with the type of sports being played, youth participation in sports usually varies from recreational to national or top competitive levels, as well as the school, district, and state levels. The intensity and training, outside expectations, and the repercussions of performance results all dramatically rise as athletes advance through these stages, which frequently raises the likelihood of competitive sports. Sports are generally linked to enjoyment and skill development at the recreational level; therefore, anxiety is usually low. At higher levels, nevertheless, performance-based selection procedures are increasing parental pressure, and coaching demands could all lead to more psychological stress (Scanlan & Lewthwaite, 1986). The fear of failure, status loss, or stakeholder disappointment is more likely to be internalized by competitive athletes, which exacerbates somatic and cognitive anxiety symptoms (Smith et al., 2006; Ommundsen & Vaglum, 1991). According to Craft et al., (2003), elite athletes frequently experience higher levels of anxiety than their recreational counterparts because of the increased stakes and attention. These results imply that, especially in youth athletes, the degree of competition is a significant moderating element in understanding sport-specific anxiety.

### **Statement of the Problem**

The increasing involvement of children and adolescents in sports has led to growing concerns regarding their psychological well-being, particularly concerning performance anxiety. Despite the recognized benefits of early sports engagement, young athletes often face significant emotional demands, especially as they transition to more competitive environments. However, research exploring how sport type (team vs. individual) and level of participation (recreational to elite) contribute to anxiety in this age group remains limited and fragmented. Most existing studies focus on adult populations or overlook contextual factors influencing youth experiences. This gap hinders the development of



targeted interventions. Therefore, a systematic examination of anxiety patterns in young athletes aged 9-14 is essential to inform evidence-based support strategies.

### Objectives of the Study

1. To assess the level of somatic anxiety, concentration disruption, worry, and overall anxiety experienced by athletes participating in individual and team sports.
2. To assess the level of somatic anxiety, concentration disruption, worry, and overall anxiety experienced by athletes participating in school-level and district and above competitions.
3. To assess the interactional effect of the type of sports played and the level of competition participated in by athletes on the level of somatic anxiety, concentration disruption, worry, and overall anxiety experienced.

### Significance of the Study

The emotional well-being of young athletes has become a critical concern as organized sports gain momentum among children. While sports offer opportunities for physical growth, discipline, and social development, they can also introduce performance-related anxiety-especially when young athletes are exposed to competitive pressures beyond their developmental readiness (Harwood & Knight, 2015). This study holds significance in identifying how the type of sport (individual vs. team) and level of participation (school and district and above) distinctly influence anxiety experiences in young athletes. Despite existing research on the adult and adolescent populations, limited empirical evidence exists on how contextual factors uniquely affect younger age groups (Grossbard et al., 2009). Findings from this study will contribute to refining theoretical models of youth sport anxiety and offer practical insights for coaches, sports psychologists, and parents in creating psychologically safe sport environments. Furthermore, the study supports global efforts to integrate mental health considerations into youth sport policy (UNESCO, 2021; WHO, 2022)

### Methods

**Participants:** The study employed a Convenience sampling method to sample a total of 534 subjects from the states of Assam and Gujarat. The subjects were selected based on the type of game they play i. e., Individual Games(266 athletes) vs.Team Games (268 athletes), and based on their level of participation, i.e., School Level (270 athletes) vs. District and above (264 athletes). Selected subjects have a specific age range from 9 to 14 years to ensure the reliability of the study.

**Table No. 1:** Inclusion and Exclusion criteria for selecting subjects.

Inclusion Criteria	Exclusion Criteria
Subjects who have regular participation in sports	Subjects not participating in any sports regularly



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Subjects having 3 years of minimum Training age.      Subjects not having a minimum of 3 years of Training Age.

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Consent to participate in this study      Psychological or medical conditions of children athletes affecting their anxiety levels

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**Variables:** The primary aim of the study was to assess how anxiety and sub-scales of anxiety (somatic anxiety, concentration disruption, and worry) are experienced by young athletes based on the type of game played by them and their competition participation level.

**Instrument used:** The Sports Anxiety Scale-2 (SAS-2), developed by Smith et al., (2006), was used by the researcher to assess the anxiety and sub-scales of anxiety pattern of young athletes. The scale SAS-2 consists of 15 questions that measure the overall anxiety experienced by athletes before and during the competition. Along with measuring overall anxiety, the scale includes 3 sub-scales of anxiety (Somatic Anxiety, Concentration Disruption, and Worry). Somatic Anxiety is measured by Questions No. 2, 6, 10, 12, and 14. Worry is measured by questions 3, 5, 8, 9, and 11. And Question No. 1, 4, 7, 13, and 15 measure Concentration Disruption. Responses from subjects are recorded on a 4-point Likert scale.

**Scoring:** The SAS-2's sub-scale scores might vary from 5 to 20. Each subscale's score is determined by adding together the participants' answers to five items. That particular attribute is more likely to be possessed by athletes who score higher on sub-scales, and vice versa. The sum of the 15 items will determine the overall anxiety score, which can be anywhere between 15 and 60. Athletes who score higher on the sum of all 15 items are more likely to suffer anxiety before or during the competition, and vice versa.

**Research Design:** This study used a  $2 \times 2$  factorial design to examine the two primary effects: The effect of type of sports played (Individual vs. Team) by subjects and level of participation (School vs. District and above) on the level of anxiety and sub-scales of anxiety and the interactional effects of type of sports played and the level of competition on the level of anxiety and sub-scale of anxiety of subjects.

**Statistical Test:** The SPSS 27 Version was used for statistical analysis of the data. First, the nature of the data was explained through descriptive statistics, including the mean & standard deviation of anxiety and sub-scales of anxiety across groups. Then the normality of the data was checked through the Shapiro-Wilk Test at 0.05 significance. Based on the result of the Shapiro-Wilk test, the Friedman test, which is the alternative non-parametric test of Two-Way ANOVA, was used for further analysis since the data of all the variables across groups violated the assumption of normality.



**Findings:**

**Table No. 1:** Descriptive Statistics of Somatic Anxiety, Concentration Disruption, Worry, and Overall Anxiety among Athletes by Sports Type and Participation Level

Variables	Type of Sports		Level of Participation		
	Individual Sport	Team Sport	School Level	District and above	
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	
<b>Somatic Anxiety</b>	10.56 ± 3.96	8.65 ± 3.15	9.68 ± 3.73	9.52 ± 3.67	
<b>Concentration Disruption</b>	10.56 ± 3.57	8.87 ± 3.04	9.74 ± 3.46	9.69 ± 3.39	
<b>Worry</b>	10.87 ± 3.85	9.21 ± 3.12	10.19 ± 3.56	9.87 ± 3.63	
<b>Overall Anxiety</b>	31.99 ± 10.09	20.73 ± 7.98	29.61 ± 9.42	29.08 ± 9.51	

As per the mean value of Table 1, athletes who played individual sports reported relatively higher somatic anxiety, concentration disruption, and worry than athletes who played team sports. This shows that increased anxiety responses may be a result of the nature of the performance settings, where the athlete bears all responsibility and pressure. In contrast, athletes who participated in team sports appeared to feel lower anxiety, possibly due to shared responsibility and social support within the group dynamics.

When assessed according to the level of participation, the school-level athletes showed marginally higher somatic anxiety and concentration disruption compared to athletes having a participation of district and above, who showed comparatively lower scores in both areas. Interestingly, the two groups' worry scores were about equal, indicating that athletes may be able to moderate the anxiety experienced by them by developing coping strategies. However, compared to athletes who participated in the district and above competitions, overall anxiety was shown to be higher among school-level athletes, suggesting that athletes at the beginning stages of competitive participation may be more susceptible to experiencing pre-performance anxiety.

After describing the nature of the data, the Shapiro-Wilk test was used to determine whether the data on anxiety and its sub-scales are normally distributed at a 0.05 significance level.

**Table No. 2:** Shapiro-Wilk Test of Normality for Anxiety and Subscales of Anxiety Across Game Type and Level of Competition



Variables	Group	Shapiro-Wilk Test	df	p value
<b>Somatic Anxiety</b>	Individual Game	.956	266	.001
	Team Game	.902	268	.001
	School Level	.935	270	.001
	District and above	.931	264	.001
<b>Concentration Disruption</b>	Individual Game	.969	266	.001
	Team Game	.927	268	.001
	School Level	.950	270	.001
	District and above	.948	264	.001
<b>Worry</b>	Individual Game	.961	266	.001
	Team Game	.943	268	.001
	School Level	.958	270	.001
	District and above	.939	264	.001
<b>Overall Anxiety</b>	Individual Game	.957	266	.001
	Team Game	.937	268	.001
	School Level	.949	270	.001
	District and above	.947	264	.001

The Shapiro-Wilk Test in Table 2 resulted in deviation from normality, i.e.,  $p = .001$  across all the variables of sports types and level of competition. Since the assumption of normal distribution of data is violated, therefore non-parametric statistics Friedman Test, which is an alternative test of Two-Way ANOVA (Analysis of Variance), will be used for further analysis.

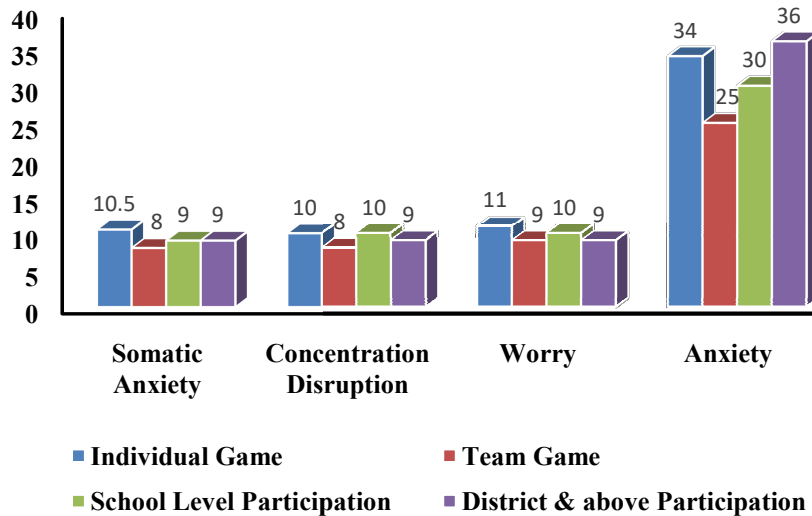
**Table No. 3:** Friedman Test Results with Mean Rank and Median Values for Anxiety and Sub-scales of Anxiety across Groups

Variables	Group	Mean Rank	Median	$\chi^2$ (Chi-Square)	df	p value	Interpretation
Somatic	Individual	1.94	10.50				



Anxiety	Game			519.43	3	.001	Significant
	Team Game	1.86	8.00				
	School Level	1.90	9.00				
	District and above	9.00	9.00				
Concentration Disruption	Individual Game	1.95	10.00	520.06	3	.001	Significant
	Team Game	2.03	8.00				
	School Level	1.98	10.00				
	District and above	9.00	9.00				
Worry	Individual Game	2.11	11.00	523.19	3	.001	Significant
	Team Game	2.12	9.00				
	School Level	2.12	10.00				
	District and above	9.00	9.00				
Overall Anxiety	Individual Game	4.00	34.50	515.28	3	.001	Significant
	Team Game	4.00	25.00				
	School Level	4.00	30.00				
	District and above	36.00	36.00				

In Table 3, the Friedman test results show a statistically significant difference for all anxiety subscales: Somatic anxiety, Concentration Disruption, Worry, and Overall Anxiety among the sport type (individual game; team sports) and level of participation (school level; district & above). The mean rank and median result demonstrated that various groups experience distinct anxiety levels before and during the competition, which suggests that anxiety experiences are influenced by sport type and competition level. In particular, Median scores indicate that while general anxiety seems to be higher at higher competition levels (district and above), athletes from individual and school-level groups seem to experience slightly higher somatic anxiety and worry compared to athletes participating in team games.



**Figure No. 1:** Graphical representation of the median value of anxiety and sub-scales of anxiety experienced by athletes from different sport types and their level of participation

**Table No. 4:** Friedman Test Result of the Interaction of Game Type and Sport Participation

Variable	Game Type	Level of Participation	Mean Rank	Median	$\chi^2$	Df	p value	Interpretation
Somatic Anxiety	Individual Game	School Level	2.00	11.00	242.01	3	.001	Significant
		District & above	1.89	10.00				
	Team Game	School Level	1.81	8.00				
		District & above	1.91	8.00				
Concentration Disruption	Individual Game	School Level	1.89	11.00	278.63	3	.001	Significant
		District & above	2.01	10.00				
	Team Game	School Level	2.05	8.00				
		District & above	1.99	8.00				
Worry	Individual Game	School Level	2.11	11.00	284.07	3	.001	Significant
		District & above	2.11	10.00				
	Team Game	School Level	2.14	9.00				



		District & above	2.09	8.00				
Overall Anxiety	Individual Game	School Level	4.00	35.00	236.70	3	.001	Significant
		District & above	4.00	30.50				
	Team Game	School Level	4.00	26.00				
		District & above	4.00	24.00				

Across all measured aspects of anxiety and sub-scales of anxiety, the Friedman test result in Table 4 showed a statistically significant interaction between the type of game played and the level of sports participation. The chi-square value indicated that the distribution of anxiety experienced before or during the competition differed significantly depending on the interaction between game type and participation level. For somatic anxiety, both the individual and the team game athletes showed variations in mean rank across school-level and district & above participation. Similar trends were seen for concentration disruption, with team game athletes showing comparatively lower mean rank, and individual game athletes at the district & above level reported higher mean rank than those at the school level; the Friedman test validated the significance of these differences, i.e.,  $p = .001$ . Athletes participating in district-level and above consistently showed higher anxiety symptoms; further, both individual and team game athletes showed elevated mean rank in terms of worry, along with a significant difference. The Friedman statistic once more supported the interaction effect, and the examination of total anxiety experienced by athletes showed significant differences in involvement levels across both individual and team game sports. These results show that athletes experiencing anxiety are influenced by both the sport they play and their level of participation, underscoring the combined impact of game-specific circumstances and competitive demands on psychological outcomes.

### Discussion

According to the current study, adolescent athletes between the ages of 9 to 14 years have anxiety experiences that are strongly influenced by the kind of sport they play and their level of participation. Similar to previous studies, athletes who played individual sports reported higher levels of somatic anxiety, worry, and concentration disruption than those who played team sports. This suggests that the stress of the individual performance contexts increases vulnerability to performance-related stress (Martens et al., 1990; Kristiansen et al., 2008). However, even though these settings do contain peer-driven and role-related stressors, the buffering effects of shared responsibility, social support, and collective coping strategies may account for the comparatively lower anxiety scores



among athletes participating in team sports (Grossbard et al., 2009; Tamminen & Crocker, 2013).

Athletes competing at the school level showed higher levels of anxiousness overall than those competing at the district & above levels. This pattern would suggest that, despite more intense demands, athletes acquire coping abilities and adaptive mechanisms as they go through higher competitive stages, which help them better manage performance stress (Scanlan & Lewthwaite, 1986; Craft et al., 2003). However, high worry scores in both groups indicate that cognitive anxiety remains a major problem for young athletes, which is consistent with the Multidimensional Anxiety Theory and emphasizes the need for treatments that address both the somatic and cognitive aspects of anxiety (Martens et al., 1990; Smith et al., 2006). The study's interaction effect further highlights how the dynamic interactions of competing contexts and sport-specific demands shape anxiety. Athletes who participated in individual sports at higher levels, in particular, displayed noticeable anxiety responses, illustrating how increasing competitive stakes increases the psychological load in situations where personal accountability is at its peak. These results support the need for youth-centered approaches to athlete mental health by highlighting the significance of specialized psychological assistance that takes into consideration the sport and competition stage (Harwood & Knight, 2015).

### **Conclusion**

The findings of the study revealed, the type of sports and the level of participation influence sports-related anxiety in adolescent athletes. Athletes who participate in individual sports reported higher levels of somatic anxiety, concentration disruption, and worry due to their increased personal accountability and performance expectations. On the other hand, athletes participating in team sports benefited from peer support and shared responsibilities, which reduced anxiety levels. Athletes participating at the school level showed somewhat higher levels of overall anxiety than those competing district and higher levels, indicating that early competition experiences may increase susceptibility to anxiety associated with performance. The combined influence of sports kind and participation level shapes anxiety, as the interaction effects are confirmed. The results highlight the necessity of different coping strategies and a supportive environment to safeguard adolescent athletes' mental health.

### **Limitations**

Several limitations should be noted, even though the current study provides information regarding how adolescent athletes' anxiety patterns are influenced by the type of sports they play and their level of participation. First, the findings' applicability to larger populations with a variety of cultural and athletic contexts is limited by the use of convenience sampling, which was used to select subjects from just Assam and Gujarat. Second, the cross-sectional design of the study limits the ability to assess developmental



changes in anxiety or establish causal relationships between competitive exposure and psychological outcomes. Third, the study used the SAS-2 to measure self-reported data, which may be subject to response biases or underreporting due to social desirability, even though it has been thoroughly validated. Finally, unmeasured contextual factors such as parental pressure, coaching style, and peer support may have influenced the observed outcomes.

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