THE COPING STRATEGIES AND ANXIOUS MANIFESTATIONS AMONG ATHLETIC AND NON-ATHLETIC HIGH SCHOOL STUDENTS

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Abstract. *Adolescence represents a critical developmental stage characterized by rapid biological, cognitive, and social changes that heighten vulnerability to stress and anxiety. Within this context, cognitive emotion regulation strategies play a central role in shaping how young people interpret, manage, and adapt to emotionally challenging situations. Understanding these mechanisms is particularly important in school-aged populations, where academic pressure, social expectations, and identity formation intersect to influence psychological well-being. The present study explores the differences between athletic and non-athletic high school students in their preferred cognitive coping strategies and self-reported anxiety manifestations. A total of 209 adolescents aged 14 to 15 years participated, completing the Cognitive Emotion Regulation Questionnaire (CERQ) and the Spence Children's Anxiety Scale (SCAS) under standardized classroom conditions. By examining how engagement in structured physical activity relates to cognitive coping patterns, the study aims to clarify whether athletic involvement contributes to a more adaptive emotional profile during adolescence. This approach aligns with contemporary theoretical perspectives emphasizing the role of appraisal processes, coping resources, and behavioral engagement in promoting resilience. The findings of this research have the potential to inform school-based mental health initiatives, guide preventive interventions, and support the development of programs that foster healthier emotional adjustment among both athletic and non-athletic youth.*

Keywords*: adolescence, cognitive emotion regulation, anxiety, athletic participation.*

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Introduction

Adolescence represents a stage marked by substantial transformation. A growing body of evidence has demonstrated a consistent link between stress and anxiety during this developmental period, with adolescent stress emerging as a predictor of negative mental health outcomes, including anxiety. Within this framework, anxiety is understood as a persistent emotional condition characterized by excessive worry, anticipatory fear, and physiological tension, typically triggered by perceived threats and capable of disrupting everyday functioning (Grant et al., 2004).

Among high school students, anxiety can interfere with academic achievement, social interactions, and family dynamics. A systematic review encompassing 61 studies reported notable increases in anxiety rates among children and adolescents (Panchal et al., 2023). Additionally, recent literature emphasizes the complex and multifaceted nature of adolescent anxiety, highlighting psychosocial stress and inadequate social support as major contributing factors (Anderson et al., 2025).

Anxiety is commonly described as an affective disorder characterized by persistent feelings of apprehension, worry, and psychological tension that arise even in the absence of identifiable threats. It frequently interacts with stress, contributing to its maintenance and amplification. The impact of anxiety extends across multiple dimensions of functioning, including physiological, psychological, and behavioral processes. When experienced at moderate levels and for limited periods, anxiety may serve an adaptive role by enhancing alertness, facilitating adjustment, and improving task performance. However, prolonged exposure to high levels of anxiety can have detrimental consequences for both mental and physical well-being. Individuals with generalized anxiety tend to display a distinctive cognitive-emotional pattern marked by excessive concerns, unrealistic expectations of danger, and persistent fears that are disproportionate to actual circumstances (Mitrache et al., 2014).

Anxiety continues to be one of the most widespread psychiatric conditions affecting adolescents and young people, with symptoms such as sleep disturbances, somatic complaints, irritability, concentration problems, fatigue, social withdrawal, and diminished academic performance (Brown., 2019). Although anxiety among students in their final year of high school is a significant and impactful issue, access to appropriate support systems and effective coping strategies can help them navigate these challenges more successfully (Spence et al., 2022)

Engaging in physical activity can provide a healthy and effective way to cope with stress and anxiety, helping to ease their symptoms (Mahindru et al., 2023). Additionally, exercise supports emotional well-being by triggering the release of endorphins, lowering stress hormones such as cortisol, and offering a mental break from persistent worries. It also contributes to improved self-esteem and strengthens emotional regulation abilities, making it a valuable strategy for managing psychological distress (Martín-Rodríguez et al., 2024).

Unlike their non-athlete counterparts, adolescent athletes begin shaping their career trajectories at an unusually early age, often engaging in intensive training and competitive commitments long before reaching adulthood (Mostafavifar et al., 2012). While adolescence is generally viewed as a developmental stage centered on care, learning, and personal growth, early sport specialization exposes young athletes to increased vulnerabilities across psychological, social, and physical domains (Baker et al., 2009).

Supportive and efficient communication may contribute to the enhancement of adaptive cognitive emotion regulation strategies, promoting positive cognitive reframing and facilitating problem-focused approaches to stressful experiences (Predoiu et al., 2019)

The stress and coping model offers a theoretical foundation for understanding how athlete identity may contribute to the development of grit through coping mechanisms (Lazarus & Folkman., 1984). According to this model, psychological adjustment to stress is determined not by the stressor itself, but by how individuals interpret and respond to it (Folkman et al.

1986). The model proposes that people first judge whether a stressful situation is relevant to their goals and well-being (primary appraisal), and then evaluate their capacity to manage or influence the situation based on the coping resources available to them (secondary appraisal) (Biggs et al., 2017). These coping resources psychological (e.g., self-efficacy, role identity), social (e.g., social support), and material (e.g., financial or physical resources) shape perceptions of controllability and guide the selection of coping strategies (Kowalski & Crocker, 2001). Coping strategies are typically classified as problem-focused, emotion-focused, or avoidant. Among these, problem-focused and emotion-focused coping are generally linked to more adaptive outcomes, supporting resilience and healthier psychological adjustment (Hill et al., 2010; Lebrun et al., 2019; Madigan et al., 2020).

Anxiety is shaped not only by exposure to stressful events but also by the cognitive and behavioral coping strategies individuals employ to deal with such challenges. Evidence suggests that adolescents who rely on more adaptive coping mechanisms tend to exhibit lower psychological vulnerability and higher levels of emotional resilience when confronted with stressful situations (Makarowski et al., 2020).

Methodology

Scope

The purpose of this study is to examine the differences between athletic and non-athletic high school students in their cognitive emotion regulation strategies and anxious manifestations, using the CERQ and SCAS instruments. The study aims to identify how perceived anxiety contribute to cognitive coping strategies, and to determine whether engagement in sports is associated with a more adaptive emotional profile.

Participants

The study included a total of 209 high school students aged between 14 and 15 years old. The sample consisted of 121 boys and 88 girls. Participants were divided into two groups based on their involvement in organized physical activity: 61 students regularly engaged in sports (athletic group), while 148 students reported no participation in structured physical activity (non-athletic group).

All participants voluntarily completed the Cognitive Emotion Regulation Questionnaire (CERQ) and the Spence Children's Anxiety Scale (SCAS), administered under standardized classroom conditions. Demographic information (age, gender, and sport participation status) was collected to ensure accurate classification. Students with incomplete responses were excluded from the final dataset.

Measures and Procedure

The evaluation of cognitive emotion regulation processes was performed using the Cognitive Emotion Regulation Questionnaire (CERQ), with data collection being conducted

via the Cognitrom Assessment System (CAS^{++}) platform, calibrated on the Romanian population by Cognitrom (see, also, Garnefski et al., 2001).

The CERQ was employed to capture the nuanced ways in which students cognitively manage emotionally challenging situations. This instrument assesses nine distinct cognitive emotion regulation strategies, ranging from adaptive approaches such as positive reappraisal and planning to less adaptive tendencies, including rumination and catastrophizing. Participants rated each item on a Likert scale, reflecting the frequency with which they rely on these strategies when confronted with negative events.

Data regarding anxiety symptoms were collected using the Spence Children's Anxiety Scale (SCAS, see Spence, 1998), administered through the Cognitrom Assessment System (CAS^{++}) platform, calibrated on the Romanian population by Cognitrom company.

The SCAS was used to evaluate the breadth of anxiety symptoms commonly experienced during adolescence. The scale covers multiple domains, including social phobia, generalized anxiety, panic symptoms, separation anxiety, and obsessive–compulsive tendencies. Students indicated how often they experienced each symptom, offering a comprehensive picture of their anxious manifestations.

Athletic vs. Non-Athletic Classification

To explore potential differences related to physical activity, participants were categorized into two distinct groups. The athletic group consisted of 61 students who regularly engaged in structured sports training, while the non-athletic group included 148 students who reported no involvement in organized physical activity. Classification was based on self-reported demographic information.

Data collection was conducted in a controlled classroom environment to ensure consistency across participants. After obtaining administrative approval and informed consent, students completed the CERQ and SCAS during a single session lasting approximately 20–25 minutes. Clear instructions were provided, and participants were assured of the confidentiality and anonymity of their responses.

Researchers were present to clarify procedural questions without influencing the content of the responses. Demographic data including age, gender, and sport participation status were recorded to support accurate group assignment. Only fully completed questionnaires were included in the final analysis.

Results

Table 1. *Descriptive Statistics for CERQ & SCAS (N = 209)*

	Minimum	Maximum	Mean	Std. Deviation
Self-Blame	4.00	20.00	10.1627	3.1913
Acceptance	5.00	20.00	12.3684	3.5223
Rumination	4.00	20.00	11.4067	3.6482
Positive Refocusing	4.00	20.00	11.2679	3.9655
Refocus on Planning	5.00	20.00	14.0144	3.8449
Positive Reappraisal	4.00	20.00	13.4928	3.5411
Putting into Perspective	4.00	20.00	12.9378	3.5478

Catastrophizing	4.00	20.00	10.0287	3.5827
Other-Blame	4.00	20.00	9.1005	3.3504
Total Score	26.00	88.00	53.7656	11.7628
Anxiety	1.00	17.00	8.6699	4.9508
Panic Attack	.00	22.00	11.3923	6.7160
Social Phobia	1.00	17.00	9.3541	5.0296
Separation Anxiety	1.00	17.00	8.8038	4.8925
Obsessive-Compulsive	1.00	17.00	9.1962	4.8103
Fear of Physical Injury	.00	13.00	6.3493	4.0308

The results indicate that adaptive cognitive emotion regulation strategies are predominantly used within the sample. The most frequently employed strategy is Planning (M = 14.01), followed by Positive Reappraisal and Putting into Perspective, suggesting that adolescents generally rely on constructive and solution-oriented approaches to manage emotional distress.

In contrast, maladaptive strategies show moderate levels, with the lowest scores observed for Blaming Others (M = 9.10) and Catastrophizing (M = 10.02). This pattern indicates that dysfunctional cognitive tendencies are present but not predominant.

Regarding anxiety symptoms, the data reveal moderate overall anxiety levels across the group. The highest scores are found on the Panic Attack subscale (M = 11.39), highlighting a stronger presence of physiological and acute anxiety responses. Social Phobia (M = 9.35) also shows elevated values, suggesting concerns related to social evaluation and avoidance.

The lowest mean score appears on the Fear of Physical Injury subscale (M = 6.34), indicating that adolescents are generally less preoccupied with physical harm or illness.

Overall, the profile reflects a combination of effective cognitive coping mechanisms and moderate anxiety symptoms, with notable vulnerabilities in the areas of panic-related responses and social anxiety patterns commonly observed during adolescence.

Table 2. *Group Statistics (descriptive)*

	N	Mean	Std. Deviation	Std. Error Mean
Positive Refocusing	148	10.885	4.0566	.3334
	61	12.196	3.6000	.4609
Other-Blame	148	8.763	3.1866	.2619
	61	9.918	3.6161	.4630

The descriptive results show that athletes tend to report higher levels of Positive Refocusing (M = 12.20, SD = 3.60) compared to non-athletes (M = 10.89, SD = 4.06). This pattern suggests that individuals who practice sports more often redirect their attention toward constructive or positive thoughts when facing stress.

In contrast, non-athletes display slightly elevated scores on Other-Blame (M = 9.92, SD = 3.62) relative to athletes (M = 8.76, SD = 3.19). This indicates that those who do not engage in sports are more inclined to attribute negative events to external sources.

These descriptive tendencies are consistent with the inferential analyses, which confirmed significant differences between the two groups on both subscales.

Table 3. *Independent sample t test*

		Levene's Test for Equality of Variances								
		F	p	t	df	p	MD	SD	95% Confidence Interval	
									Lower	Upper
Positive Refocusing	Equal variances assumed	.629	.429	-2.19	207	.029	-1.31	.597	-2.49	-.132
Other-Blame	Equal variances assumed	1.36	.243	-2.28	207	.023	-1.15	.504	-2.14	-.159

Note. MD = mean difference, SD = standard error of difference.

The independent-samples t-tests identified significant group differences for both Positive Refocusing and Other-Blame.

For Positive Refocusing, athletes scored higher than non-athletes, a difference supported by the statistical test, t(207) = –2.19, p = .029. The mean difference of –1.31 (95% CI [–2.49, –0.13]) indicates that individuals engaged in sports tend to rely more on redirecting their attention toward positive or constructive thoughts when managing stress.

In the case of Other-Blame, non-athletes showed significantly elevated scores compared to athletes, t(207) = –2.29, p = .023. The observed mean difference of –1.15 (95% CI [–2.15, –0.16]) suggests that those who do not participate in sports are more likely to attribute negative outcomes to external factors, reflecting a less adaptive cognitive emotion regulation style.

Table 4. *Ranks (U test)*

	0	N	Mean Rank	Sum of Ranks
Positive Refocusing	.00	148	99.15	14673.50
	1.00	61	119.20	7271.50
	Total	209		
Other-Blame	.00	148	99.26	14690.50
	1.00	61	118.93	7254.50
	Total	209		

Table 5. *Mann-Whitney U test statistics*

	Positive Refocusing	Other-Blame
Mann-Whitney U	3647.50	3664.50
Wilcoxon W	14673.50	14690.50
Z	-2.186	-2.148
Asymp. Sig. (2-tailed)	0.029	0.032

The Mann–Whitney U analyses revealed significant differences between athletes and non-athletes on two CERQ subscales. For Positive Refocusing, athletes obtained higher mean ranks than non-athletes (119.20 vs. 99.15), U = 3647.50, Z = –2.186, p = 0.029. This indicates that athletes are more inclined to shift their attention toward positive or goal-directed thoughts when confronted with stress, reflecting a more adaptive cognitive emotion regulation strategy.

For Other-Blame, non-athletes showed higher mean ranks compared to athletes (118.93 vs. 99.26), U = 3664.50, Z = –2.148, p = 0.032. This suggests that non-athletes tend to externalize responsibility and attribute negative events to others more frequently, a pattern generally regarded as less adaptive in emotional regulation.

Table 6. *CERQ Pearson Correlations*

Non-Athletes (N = 148)			Self-Blame	Acceptance	Rumination	Positive Refocusing	Planning Refocusing	Positive Reappraisal	Putting into Perspective	Catastrophizing	Other-Blame
	Self-Blame	r	1	.460**	.463**	-.004	.207*	.021	.321**	.311**	.074
		p		.000	.000	.965	.011	.801	.000	.000	.374
	Acceptance	r	.460**	1	.502**	.165*	.391**	.281**	.440**	.314**	.191*
		p	.000		.000	.045	.000	.001	.000	.000	.020
	Rumination	r	.463**	.502**	1	.187*	.284**	.085	.274**	.369**	-.012
		p	.000	.000		.023	.000	.305	.001	.000	.887
	Positive Refocusing	r	-.004	.165*	.187*	1	.343**	.405**	.332**	.163*	.207*
		p	.965	.045	.023		.000	.000	.000	.048	.012
	Planning Refocusing	r	.207*	.391**	.284**	.343**	1	.545**	.446**	-.053	.127
		p	.011	.000	.000	.000		.000	.000	.524	.124
	Positive Reappraisal	r	.021	.281**	.085	.405**	.545**	1	.470**	-.040	.111
		p	.801	.001	.305	.000	.000		.000	.628	.180
	Putting into Perspective	r	.321**	.440**	.274**	.332**	.446**	.470**	1	.199*	.223**
		p	.000	.000	.001	.000	.000	.000		.015	.006
	Catastrophizing	r	.311**	.314**	.369**	.163*	-.053	-.040	.199*	1	.412**
		p	.000	.000	.000	.048	.524	.628	.015		.000
	Other-Blame	r	.074	.191*	-.012	.207*	.127	.111	.223**	.412**	1
		p	.374	.020	.887	.012	.124	.180	.006	.000	
Athletes (N = 61)	Self-Blame	r	1	.409**	.228	.423**	.123	.474**	.330**	.268*	.100
		p		.001	.077	.001	.346	.000	.009	.037	.445
	Acceptance	r	.409**	1	.170	.321*	.057	.142	.308*	.202	.219
		p	.001		.190	.012	.661	.276	.016	.119	.090
	Rumination	r	.228	.170	1	.196	.298*	.324*	.384**	.453**	.220
		p	.077	.190		.131	.020	.011	.002	.000	.089
	Positive Refocusing	r	.423**	.321*	.196	1	.158	.175	.311*	.090	.046
		p	.001	.012	.131		.224	.177	.015	.490	.724
	Planning Refocusing	r	.123	.057	.298*	.158	1	.542**	.550**	-.046	-.204
		p	.346	.661	.020	.224		.000	.000	.727	.115
	Positive Reappraisal	r	.474**	.142	.324*	.175	.542**	1	.498**	.018	-.161
		p	.000	.276	.011	.177	.000		.000	.889	.215
	Putting into Perspective	r	.330**	.308*	.384**	.311*	.550**	.498**	1	.060	-.071
		p	.009	.016	.002	.015	.000	.000		.648	.584
	Catastrophizing	r	.268*	.202	.453**	.090	-.046	.018	.060	1	.558**
		p	.037	.119	.000	.490	.727	.889	.648		.000
	Other-Blame	r	.100	.219	.220	.046	-.204	-.161	-.071	.558**	1
		p	.445	.090	.089	.724	.115	.215	.584	.000	

**. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).

The correlation analysis for non-athletes reveals a regulatory profile characterized by a mixture of adaptive and maladaptive cognitive strategies, with several statistically significant associations indicating how these processes tend to co-occur within this group.

A first notable pattern is the role of Self-Blame, which shows significant positive associations with Acceptance ($r = .409$, $p < .01$), Positive Refocusing ($r = .423$, $p < .01$), Positive Reappraisal ($r = .474$, $p < .01$), Putting into Perspective ($r = .330$, $p < .01$), and Catastrophizing ($r = .311$, $p < .05$).

This combination suggests that non-athletes who engage in self-critical thinking simultaneously activate both adaptive and maladaptive strategies, reflecting a less stable and less coherent regulatory pattern.

A second and more pronounced pattern emerges within the maladaptive domain. The strongest correlations in the matrix are found between Catastrophizing and Other-Blame ($r = .558$, $p < .01$), followed by Rumination and Catastrophizing ($r = .453$, $p < .01$) and Rumination and Putting into Perspective ($r = .384$, $p < .01$). These associations indicate a dense maladaptive cluster, in which repetitive negative thinking, catastrophic interpretations, and externalization of blame reinforce one another. This configuration suggests heightened vulnerability to escalating negative cognitive cycles among non-athletes.

Adaptive strategies also show several significant interrelations, although the pattern is less cohesive compared to athletes. The strongest associations include Planning Refocusing with Positive Reappraisal ($r = .542$, $p < .01$), Planning Refocusing with Putting into Perspective ($r = .550$, $p < .01$), and Positive Reappraisal with Putting into Perspective ($r = .498$, $p < .01$). These correlations indicate that non-athletes do employ constructive strategies, but the adaptive network appears less integrated and less systematically coordinated.

Overall, the correlation structure suggests that non-athletes rely on a fragmented and less efficient emotion regulation system, where maladaptive strategies form the most cohesive cluster, while adaptive strategies are used inconsistently. The coexistence of self-blame with both positive and negative strategies further reflects a regulatory pattern marked by instability and emotional vulnerability.

The correlation analysis for athletes reveals a regulatory profile marked by a high degree of coherence and functional integration, with adaptive strategies forming a particularly strong and interconnected system. The pattern of associations suggests that athletes tend to mobilize constructive cognitive mechanisms in a coordinated manner, while maladaptive strategies, although present, exert a more limited influence on the overall regulatory structure.

Within this configuration, Self-Blame emerges as a central element, showing significant positive associations with Acceptance ($r = .409$, $p < .01$), Positive Refocusing ($r = .423$, $p < .01$), Positive Reappraisal ($r = .474$, $p < .01$), Putting into Perspective ($r = .330$, $p < .01$), and Catastrophizing ($r = .268$, $p < .05$).

This pattern indicates that self-critical thinking among athletes is not isolated or destabilizing but instead tends to activate a range of adaptive strategies. Rather than amplifying vulnerability, self-blame appears to function as a cognitive pivot that facilitates reorientation toward reinterpretation, perspective-taking, and constructive emotional processing.

The maladaptive domain shows meaningful associations as well, yet these links are less dense and less structurally dominant than in non-athletes. Connections such as Rumination with Catastrophizing ($r = .453$, $p < .01$), Rumination with Putting into Perspective ($r = .384$, $p < .01$), and Catastrophizing with Other-Blame ($r = .558$, $p < .01$) indicate that negative repetitive thinking and catastrophic interpretations can co-occur. However, the overall pattern suggests that these processes do not form a rigid or self-reinforcing cluster. Their weaker integration implies a reduced tendency for maladaptive strategies to escalate into persistent negative cognitive cycles.

In contrast, the adaptive strategies form a particularly robust and cohesive network. Planning Refocusing shows strong associations with Positive Reappraisal ($r = .542$, $p < .01$) and Putting into Perspective ($r = .550$, $p < .01$), while Positive Reappraisal is also strongly linked to Putting into Perspective ($r = .498$, $p < .01$). These interrelations reflect a system in which constructive strategies are used in a coordinated and mutually reinforcing manner. Athletes appear to rely on a flexible, goal-oriented approach to emotional regulation, characterized by cognitive reframing, solution-focused thinking, and the ability to contextualize stressful events.

Other-Blame occupies a marginal position within the regulatory structure, showing limited connections aside from its association with Catastrophizing. This suggests that externalizing responsibility is not a central mechanism in athletes' emotional processing and does not substantially shape their regulatory patterns.

Taken together, the correlation structure indicates that athletes exhibit a more stable, integrated, and adaptively oriented regulatory profile. Their emotional regulation is characterized by the coordinated use of constructive strategies and by a reduced interdependence among maladaptive processes, reflecting a resilient cognitive-emotional system capable of maintaining balance and flexibility under stress.

Table 7. *SCAS Pearson Correlations*

			Total Score	Anxiety	Panic Attack	Social Phobia	Separation Anxiety	Obsessive–Compulsive	Fear of Physical Harm
Non-Athletes	Total Score	r	1	.404**	.486**	.323**	.331**	.479**	.313**
		p		.000	.000	.000	.000	.000	.000
(N = 148)	Anxiety	r	.404**	1	.081	-.068	-.089	.029	-.005
		p	.000		.327	.411	.282	.723	.954
	Panic Attack	r	.486**	.081	1	-.065	-.130	.024	-.077
		p	.000	.327		.429	.116	.775	.351
	Social Phobia	r	.323**	-.068	-.065	1	-.062	-.009	-.002
		p	.000	.411	.429		.453	.912	.985
	Separation	r	.331**	-.089	-.130	-.062	1	.121	.037
	Anxiety	p	.000	.282	.116	.453		.142	.657
	Obsessive–	r	.479**	.029	.024	-.009	.121	1	.018
	Compulsive	p	.000	.723	.775	.912	.142		.828
	Fear of Physical	r	.313**	-.005	-.077	-.002	.037	.018	1
	Harm	p	.000	.954	.351	.985	.657	.828	
Athletes	Total Score	r	1	.314*	.262*	.461**	.432**	.498**	.238
(N = 61)		p		.014	.041	.000	.001	.000	.064
	Anxiety	r	.314*	1	-.226	.095	.036	-.010	-.091
		p	.014		.080	.465	.780	.940	.486
	Panic Attack	r	.262*	-.226	1	-.082	-.164	-.166	-.223
		p	.041	.080		.529	.207	.200	.084
	Social Phobia	r	.461**	.095	-.082	1	.063	.092	-.132
		p	.000	.465	.529		.631	.480	.310
	Separation	r	.432**	.036	-.164	.063	1	.090	.003
	Anxiety	p	.001	.780	.207	.631		.491	.981
	Obsessive–	r	.498**	-.010	-.166	.092	.090	1	.268*
	Compulsive	p	.000	.940	.200	.480	.491		.037
	Fear of Physical	r	.238	-.091	-.223	-.132	.003	.268*	1
	Harm	p	.064	.486	.084	.310	.981	.037	

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Non-Athletes

The correlation matrix for non-athletes indicates a consistent and moderately strong association between the Total Score and all measured anxiety dimensions. The strongest relationships emerged with Panic Attack ($r = .486$, $p < .001$) and Obsessive–Compulsive symptoms ($r = .479$, $p < .001$), suggesting that higher overall psychological vulnerability is most closely linked to acute physiological anxiety responses and intrusive, repetitive cognitive patterns. Additional significant correlations were observed with Anxiety ($r = .404$, $p < .001$), Social Phobia ($r = .323$, $p < .001$), Separation Anxiety ($r = .331$, $p < .001$), and Fear of Physical Harm ($r = .313$, $p < .001$).

This pattern reflects a broad and diffuse anxiety profile, in which increases in general emotional distress are associated with elevations across multiple anxiety domains. The uniformly positive correlations suggest that non-athletes experience anxiety symptoms in a globally interconnected manner, without clear differentiation between specific anxiety subtypes.

Athletes

In athletes, the Total Score also showed significant associations with several anxiety dimensions, but the pattern was more selective and more structured compared to non-athletes. The strongest correlations were found with Obsessive–Compulsive symptoms ($r = .498$, $p <$

.001), Social Phobia (r = .461, p < .001), and Separation Anxiety (r = .432, p < .001). These findings indicate that athletes with higher overall emotional distress tend to exhibit heightened concerns related to performance evaluation, interpersonal judgment, and attachment-related anxiety.

Moderate correlations were also observed with Anxiety (r = .314, p < .05) and Panic Attack (r = .262, p < .05), while Fear of Physical Harm did not reach statistical significance (r = .238, p = .064). This suggests that athletes may experience anxiety in a more domain-specific manner, with stronger associations in areas relevant to social evaluation, discipline, and internalized pressure.

Comparative Interpretation

Taken together, the results indicate that: non-athletes show a broad, generalized anxiety pattern, with significant correlations across all domains, including physiological, cognitive, and social components; athletes, by contrast, display a more focused anxiety profile, with the strongest associations concentrated in Obsessive–Compulsive, Social Phobia, and Separation Anxiety, domains that align with performance expectations, self-monitoring, and interpersonal sensitivity.

The most significant correlations across both groups for Non-Athletes: Panic Attack (0.486), Obsessive–Compulsive (0.479), while for Athletes: Obsessive–Compulsive (0.498), Social Phobia (0.461), Separation Anxiety (0.432). These findings highlight that while both groups experience anxiety in relation to overall emotional distress, the structure and intensity of these associations differ meaningfully.

Table 8. *Correlation between Self-Blame and Panic Attack Symptoms (N = 209)*

		Self-Blame	Panic Attack Symptoms
Pearson Correlation	Self-Blame	1.000	.187
	Panic Attack	.187	1.000
p	Self-Blame	.	.003
	Panic Attack	.003	.
N	Self-Blame	209	209
	Panic Attack	209	209

Table 9. *Linear regression coefficients predicting self-blame from panic attack symptoms*

		Unstandardized Coefficients		Standardized Coefficients		
	Model	B	Std. Error	Beta	t	Sig.
1	(Constant)	9.149	.429		21.337	.000
	Panic Attack	.089	.032	.187	2.742	.007

A Pearson correlation analysis showed a significant positive association between self-blame and panic attack symptoms, r = .187, p = .003. This indicates that individuals reporting higher levels of panic-related symptoms also tend to report higher levels of self-blame.

To further examine this relationship, a simple linear regression was conducted with self-blame as the dependent variable and panic attack symptoms as the predictor. The regression model was significant, F(1, 207) = 7.52, p = .007, explaining 3.5% of the variance

in self-blame (R^2 = .035). Panic attack symptoms emerged as a significant predictor of self-blame, B = 0.089, t = 2.74, p = .007, indicating that increases in panic symptoms are associated with higher levels of self-blame.

Overall, the results suggest that panic-related experiences contribute modestly but significantly to the tendency to engage in self-blaming cognitive strategies.

Discussion and Conclusions

The findings of this study highlight meaningful differences between athletic and non-athletic high school students in both cognitive emotion regulation and anxiety manifestations. Overall, adolescents demonstrated a predominant use of adaptive cognitive strategies, such as planning, positive reappraisal, and putting situations into perspective, suggesting that constructive cognitive coping is generally well-developed at this age. However, maladaptive strategies including self-blame, rumination, and catastrophizing were also present at moderate levels, indicating that emotional regulation remains a developing skill during early adolescence.

The effects of stressors are influenced not only by their objective characteristics but also by the manner in which individuals perceive, interpret, and cognitively appraise them. The relationship between stressful experiences and their psychological outcomes is influenced by various cognitive and emotional processes that play a significant role in determining adaptation and overall well-being (Mitrache et al., 2019).

A central contribution of the study is the identification of sport participation as a relevant factor in shaping cognitive coping tendencies. Athletes reported significantly higher levels of positive refocusing, a strategy associated with redirecting attention toward constructive or goal-oriented thoughts. This suggests that engagement in structured physical activity may foster more adaptive cognitive responses to stress. In contrast, non-athletes scored higher on other-blame, reflecting a greater tendency to externalize responsibility for negative events an approach generally considered less adaptive. These group differences were confirmed through both parametric and non-parametric analyses, underscoring the robustness of the findings.

Previous research indicates that adolescents who regularly participate in physical activity and organized sports tend to exhibit greater self-esteem, a stronger sense of personal value, and a more favorable physical self-concept. In addition, Donaldson and Ronan highlighted the beneficial role of organized sport participation in promoting emotional and social adaptation throughout early adolescence (Dolenc, 2015).

Social anxiety represents one of the most common psychological difficulties encountered during adolescence. Evidence suggests that its onset frequently occurs in early adolescence, with most individuals reporting their first symptoms before the age of 15. The prevalence of social anxiety tends to increase progressively after childhood and reaches its highest levels during adolescence. Concerns related to peer evaluation and fear of negative judgment play a central role during this developmental period, making adolescents particularly susceptible to social anxiety manifestations. Although social anxiety often co-occurs with other psychological disorders, it remains one of the most prevalent mental health concerns among

young people, affecting approximately 20-30% of adolescent populations (Üstündağ et al., 2025).

In line with previous findings obtained in athletic populations, coping resources appear to represent a key factor in anxiety management. Athletes' greater reliance on adaptive cognitive emotion regulation strategies may facilitate more effective emotional adjustment and strengthen resilience when confronted with stressful experiences (Grigore et al., 2015).

The correlational analyses further revealed distinct regulatory patterns within each group. Among non-athletes, maladaptive strategies formed a dense and interconnected cluster, with strong associations between catastrophizing, rumination, and externalization of blame. This configuration suggests a vulnerability toward escalating negative cognitive cycles. In athletes, adaptive strategies were more cohesively integrated, and maladaptive tendencies were less strongly interrelated, indicating a more stable and efficient regulatory system.

Anxiety profiles also differed between groups. Non-athletes exhibited a broad and generalized pattern of anxiety, with significant correlations across all SCAS subscales. This suggests that emotional distress in non-athletes tends to manifest diffusely across physiological, cognitive, and social domains. Athletes, however, showed a more selective anxiety structure, with the strongest associations emerging in obsessive–compulsive symptoms, social phobia, and separation anxiety domains that align with performance expectations, interpersonal evaluation, and discipline-related pressures.

Regular engagement in physical exercise has been recognized as an effective and accessible strategy for promoting adolescent mental health. Evidence suggests that participation in physical activity contributes to lower levels of anxiety and depressive symptoms while also reducing the likelihood of behavioral difficulties such as impulsivity and aggression. These beneficial outcomes may be explained by the complex physiological and psychological mechanisms through which physical activity enhances emotional regulation, psychological adjustment, and overall well-being (Wu et al., 2025).

Within sport psychology, coping skills are considered essential resources that enable athletes to effectively regulate emotional, cognitive, and behavioral responses when faced with stressful situations. The transactional model of stress and coping suggests that anxiety is not solely a consequence of exposure to stressors; rather, it is largely shaped by how individuals evaluate their capacity and available resources to deal with those stressors. Consequently, athletes who perceive themselves as having adequate coping resources are more likely to demonstrate adaptive emotional regulation and reduced anxiety levels (El Kessimi, 2026).

Anxiety is a common response to challenging life situations such as examinations, interviews, medical procedures, or competitive events. While moderate levels of anxiety may serve an adaptive function by increasing alertness and motivation, excessive or persistent anxiety can interfere with daily functioning, disrupt sleep patterns, and negatively affect overall well-being. Previous research suggests that although a certain degree of anxiety may enhance performance, prolonged exposure to high anxiety levels is associated with decreased motivation, reduced productivity, and lower performance outcomes (Hatami, 2023).

Communication is an essential component of psychosocial adaptation, contributing to the establishment of meaningful social relationships and facilitating integration within various

social contexts. In contrast, ineffective communication may be associated with adjustment difficulties and heightened emotional vulnerability (Paunescu et al, 2016).

Finally, the relationship between self-blame and panic symptoms emerged as a significant predictor model, indicating that adolescents experiencing more intense panic-related symptoms are more likely to engage in self-critical cognitive patterns. Although the explained variance was modest, this finding highlights the importance of addressing self-directed negative thinking in interventions targeting anxiety.

Taken together, the results suggest that participation in sports is associated with a more adaptive emotional and cognitive profile, characterized by greater use of constructive regulation strategies and a more structured anxiety pattern. Non-athletes, by contrast, appear more vulnerable to maladaptive cognitive cycles and generalized anxiety manifestations. These findings underscore the potential value of promoting structured physical activity during adolescence as a means of supporting emotional resilience and healthier cognitive coping.

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References

Anderson, T.L., Valiauga, R., Tallo, C., Hong, C.B., Manoranjithan, S., Domingo, C., Paudel, M., Untaroiu, A., Barr, S. and Goldhaber, K. (2025), Contributing Factors to the Rise in Adolescent Anxiety and Associated Mental Health Disorders: A Narrative Review of Current Literature. *Journal of Child and Adolescent Psychiatric Nursing, 38*: e70009. https://doi.org/10.1111/jcap.70009

Baker, J., Cobley, S., & Fraser-Thomas, J. (2009). What do we know about early sport specialization? Not much! *High Ability Studies, 20*(1), 77–89. https://doi.org/10.1080/13598130902860507

Biggs, A., Brough, P., & Drummond, S. (2017). Lazarus and Folkman's psychological stress and coping theory. In C. L. Cooper & J. C. Quick (Eds.), *The Handbook of Stress and Health* (pp. 351-364). Wiley.

Brown, M. L. (2019). Integrative Approaches to Stress, Anxiety, and Resilience. *Pediatric Annals, 48*(6), e226–e230. https://doi.org/10.3928/19382359-20190515-05

Cognitrom. (n.d.). *Cognitrom Assessment System (CAS++).* Cluj-Napoca, Romania.

Dolenc, P. (2015). Anxiety, self-esteem and coping with stress in secondary school students in relation to involvement in organized sports [Anksioznost, samospoštovanje in spoprijemanje s stresom pri srednješolcih v povezavi z vključenostjo v organizirano športno aktivnost]. *Slovenian Journal of Public Health, 54*(3), 222-229.

El Kessimi, I. (2026). *The role of previous failures, athlete coping skills, and sport type on sport-related anxiety* [Master's thesis, Lithuanian University of Health Sciences]. Lithuanian University of Health Sciences Repository.

Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. J. (1986). Dynamics of a stressful encounter: Cognitive appraisal, coping, and encounter outcomes. *Journal of Personality and Social Psychology, 50*(5), 992-1003. https://doi.org/10.1037//0022-3514.50.5.992

Garnefski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personality and Individual Differences, 30*(8), 1311-1327. https://doi.org/10.1016/S0191-8869(00)00113-6

Grant, K. E., Compas, B. E., Thurm, A. E., McMahon, S. D., & Gipson, P. Y. (2004). Stressors and Child and Adolescent Psychopathology: Measurement Issues and Prospective Effects. Journal of Clinical Child & Adolescent Psychology, 33(2), 412–425. https://doi.org/10.1207/s15374424jccp3302_23

Grigore, V., Mitrache, G., Predoiu, R., Păunescu, M., & Radu, A. (2015). Trait anxiety and coping strategies in aerobic gymnastics and handball. *Medimond International Proceedings – 4th International Congress of Physical Education, Sport and Kinetotherapy (ICSPEK 2014)*, 193-198.

Hatami, O. (2023). Comparison of self-efficacy, competitive anxiety and psychological toughness in athlete and non-athlete students. *Gazi Journal of Physical Education and Sport Sciences*, *28(*2), 167-173. https://doi.org/10.53434/gbesbd.1201334

Hill, A. P., Hall, H. K., & Appleton, P. R. (2010). Perfectionism and athlete burnout in junior elite athletes: the mediating role of coping tendencies. *Anxiety, Stress, & Coping*, *23*(4), 415–430. https://doi.org/10.1080/10615800903330966

Kowalski, K. C., & Crocker, P. R. (2001). Development and Validation of the Coping Function Questionnaire for Adolescents in Sport. *Journal of Sport and Exercise Psychology*, *23*(2), 136-155. https://doi.org/10.1123/jsep.23.2.136

Lazarus, R. S., & Folkman S. (1984). Coping and adaptation. In W. D Gentry (Ed.), *The handbook of behavioral medicine* (pp. 282–325). Guilford.

Lebrun, F., MacNamara, Á., Collins, D., & Rodgers, S. (2019). Elite Athletes Coping With Depression: A Qualitative Study. *Journal of Clinical Sport Psychology*, *13*(3), 351-373. https://doi.org/10.1123/jcsp.2018-0072

Madigan, D. J., Rumbold, J. L., Gerber, M., & Nicholls, A. R. (2020). Coping tendencies and changes in athlete burnout over time. *Psychology of Sport and Exercise, 48:* 101666. https://doi.org/10.1016/j.psychsport.2020.101666

Mahindru, A., Patil, P., & Agrawal, V. (2023). Role of Physical Activity on Mental Health and Well-Being: A Review. *Cureus, 15*(1): e33475. https://doi.org/10.7759/cureus.33475

Makarowski, R., Piotrowski, A., Predoiu, R., Görner, K., Predoiu, A., Mitrache, G., Malinauskas, R., Bochaver, K., Dovzhik, L., Cherepov, E., Vazne, Z., Vicente-Salar, N., Hamzah, I., Miklósi, M., Kovács, K., & Nikkhah-Farkhani, Z. (2020). Stress and coping during the COVID-19 pandemic among martial arts athletes–a cross-cultural study. *Archives of Budo, 16*, 161-171.

Martín-Rodríguez, A., Gostian-Ropotin, L. A., Beltrán-Velasco, A. I., Belando-Pedreño, N., Simón, J. A., López-Mora, C., Navarro-Jiménez, E., Tornero-Aguilera, J. F., & Clemente-Suárez, V. J. (2024). Sporting Mind: The Interplay of Physical Activity and Psychological Health. *Sports, 12*(1): 37. https://doi.org/10.3390/sports12010037

Mitrache, G., Bratu, M., Geambaşu, A., & Predoiu, R. (2019). The relationship between coping strategies and stress levels in kinetotherapy master's students. *Discobolul – Physical Education, Sport & Kinetotherapy Journal, 56*, 55-61.

Mitrache G., Predoiu, R., Coliță, E., & Coliță, D. (2014). A-state, A-trait and the performance of 14-15 years old football players. *Procedia-Social and Behavioral Sciences, 127*, 321-325. https://doi.org/10.1016/j.sbspro.2014.03.264

Mostafavifar, A. M., Best, T. M., & Myer, G. D. (2013). Early sport specialisation, does it lead to long-term problems?. *British Journal of Sports Medicine*, 47(17), 1060–1061. https://doi.org/10.1136/bjsports-2012-092005

Panchal, U., Salazar de Pablo, G., Franco, M., Moreno, C., Parellada, M., Arango, C., & Fusar-Poli, P. (2023). The impact of COVID-19 lockdown on child and adolescent mental health: systematic review. *European child & adolescent psychiatry*, *32*(7), 1151-1177. https://doi.org/10.1007/s00787-021-01856-w

Paunescu, M., Grigore, V., Pelin, F., Ciolca, C., & Mitrache, G. (2016). The assessment of communication styles in young people with social exclusion risk. *Proceedings of the 3rd International Multidisciplinary Scientific Conference on Social Sciences and Arts SGEM 2016*, 949-954.

Predoiu, R., Mitrache, G., Predoiu, A., Grigore, V., Mihăilă, C. V., & Ciuntea, L. (2019). Ways of improving the verbal, nonverbal and paraverbal communication with athletes. *Discobolul-Physical Education, Sport & Kinetotherapy Journal*, *56*(1), 20-26.

Spence, S. H. (1998). A measure of anxiety symptoms among children. *Behaviour Research and Therapy, 36*(5), 545-566. https://doi.org/10.1016/S0005-7967(98)00034-5

Spence, S. H., Lawrence, D., & Zubrick, S. R. (2022). Anxiety trajectories in adolescents and the impact of social support and peer victimization. *Research on Child and Adolescent Psychopathology*, *50*, 795–807. https://doi.org/10.1007/s10802-021-00887-w

Üstündağ, A., Haydaroğlu, S., Sayan, D., & Güngör, M. (2025). The relationship between social anxiety levels and effective communication skills of adolescents participating in sports. *Scientific reports*, *15*(1), 15724. https://doi.org/10.1038/s41598-025-00800-1

Wu, J., Zhao, X., Shao, Y., Zang, W., Jun, H., & Yu, W. (2025). The impact of physical exercise on internalizing and externalizing problem behaviors among middle school students: correlation and regression prediction analysis. *Child and adolescent psychiatry and mental health*, *19*(1), 45. https://doi.org/10.1186/s13034-025-00903-7