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Psychological Effects of Early Competitive Sports Participation on Self-Esteem and Anxiety Among Primary School Children

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Abstract

Purpose

Early participation in competitive sports is increasingly prevalent among primary school children worldwide. This study investigates the psychological effects of structured competitive sports involvement on self-esteem and anxiety among children aged 6–12 years, addressing a significant research gap in understanding how early competitive experiences influence mental health during critical developmental stages.

Methods

A cross-sectional comparative design was employed with 200 primary school students (participants in competitive sports: n = 110; non-participants: n = 90; mean age = 8.90 years, SD = 1.90). Self-esteem was measured using the Rosenberg Self-Esteem Scale (RSES; $\alpha = 0.77$), and anxiety was assessed via the Revised Children's Manifest Anxiety Scale (RCMAS; $\alpha = 0.92$). Independent samples *t*-tests and Pearson correlation coefficients were conducted to analyze differences and associations between groups.

Results

Children participating in competitive sports demonstrated significantly higher self-esteem (M = 22.01, SD = 2.84) compared to non-participants (M = 19.07, SD = 3.55), $t(198) = 7.23$, $p < 0.001$, Cohen's $d = 1.02$. Anxiety levels were significantly lower in participants (M = 11.45, SD = 4.07) versus non-participants (M = 15.57, SD = 5.06), $t(198) = -6.58$, $p < 0.001$, Cohen's $d = 0.93$. A strong negative correlation was observed between self-esteem and anxiety ($r = -0.68$, $p < 0.001$), indicating that enhanced self-worth is associated with reduced anxiety. Participation frequency and duration showed positive correlations with self-esteem improvement ($r = 0.52$, $p < 0.001$).

Conclusions

When appropriately supervised and developmentally sensitive, early competitive sports participation fosters emotional resilience, enhances self-concept, and reduces anxiety symptoms among primary school children. These findings support the integration of structured, supportive competitive experiences into school-based physical education programs while emphasizing age-appropriate coaching, positive reinforcement, and balanced competitive environments that prioritize psychological well-being alongside athletic development.

Keywords

competitive sports; primary school children; self-esteem; anxiety; psychological effects; youth development; mental health; school sports programs

1. Introduction

Participation in organized sports during childhood represents a critical component of holistic child development, offering recognized benefits for physical fitness, motor skill acquisition, social competence, and emotional growth (Brown & Evans, 2017). Over the past two decades, early competitive sports participation has become increasingly normative, with children as young as 6–7 years engaging in structured training regimens, competitive tournaments, and league-based competitions. This trend toward early athletic involvement raises important questions regarding its psychological impact during sensitive developmental periods when personality, emotional regulation, and self-concept are actively forming.

1.1 Theoretical Context and Literature Background

From a developmental perspective, organized sports provide theoretically significant mechanisms for psychological development. Mastery experiences derived from progressive skill acquisition and competitive achievement contribute to enhanced self-efficacy beliefs and global self-esteem (Bandura, 1977; Weiss, 2000). The peer support systems inherent to team sports environments and formal athletic training create belonging and social connectedness—constructs critically associated with psychological well-being during middle childhood (Eime et al., 2013; Collins, 2018).

However, contemporary research reveals a complex, bidirectional relationship between competitive sports participation and mental health outcomes in younger populations. While controlled competitive experiences can enhance emotional resilience and psychological regulation, intense competitive pressure, fear of failure, and excessive extrinsic motivation may paradoxically increase anxiety symptomatology and erode self-concept in developmentally immature athletes (Scanlan & Lewthwaite, 1986; Gould et al., 2002; Harwood et al., 2019). The tension between potential psychological benefits and risks remains inadequately understood in primary school-aged populations, who possess limited emotional coping mechanisms and developing understanding of competitive success and failure.

1.2 Research Gap and Rationale

Despite expanding youth sports participation globally, empirical investigation of psychological outcomes—specifically self-esteem and anxiety—remains fragmented and concentrated predominantly on adolescent and older athlete populations. Jewett et al. (2014) and Moeijes et al. (2018) documented longitudinal associations between sports participation and mental health in older children, yet comparable evidence for primary school-aged children (6–12 years) remains sparse. This developmental stage represents a critical window for psychological intervention and environmental optimization, as experiences during these formative years establish foundational patterns of self-perception, stress response, and recreational engagement that persist into adolescence and adulthood.

The present investigation addresses this empirical lacuna by systematically comparing psychological profiles of early competitive sports participants with non-participating peers, thereby isolating the specific psychological effects of competitive involvement during primary school years.

1.3 Research Objectives and Hypotheses

Primary Objectives:

1. To examine differences in self-esteem levels between primary school children participating in competitive sports and non-participant controls.
2. To assess anxiety symptomatology differences between sports-participating and non-participating children.
3. To explore the relationship between self-esteem and anxiety among competitive sports participants.
4. To evaluate how participation duration and frequency moderate psychological outcomes.

Research Hypotheses:

- **H_1:** Children participating in early competitive sports report significantly higher self-esteem than non-participants.
- **H_2:** Children participating in competitive sports demonstrate significantly lower anxiety than non-participants.
- **H_3:** A significant negative correlation exists between self-esteem and anxiety levels ($r < -0.50$).
- **H_4:** Participation frequency and duration positively predict self-esteem enhancement and anxiety reduction.

2. Methods

2.1 Research Design and Participants

A cross-sectional comparative design was employed to evaluate psychological outcomes across competitive sports participation groups. The study population comprised primary school children (aged 6–12 years) from four selected schools offering structured physical education and competitive sports programs. A stratified random sampling technique ensured balanced representation across gender, age categories (6–9 and 10–12 years), and sport disciplines.

Participant characteristics: The final sample comprised 200 children (M_age = 8.90 years, SD = 1.90; 52% male, 48% female) divided into two groups:

- **Competitive sports group (n = 110):** Active participation in organized competitive sports (athletics, football, cricket, badminton, swimming, gymnastics) for minimum 6 months to 1 year; mean participation frequency = 2.93 sessions/week (SD = 1.42); mean duration = 28.24 months (SD = 12.39).
- **Control group (n = 90):** Non-participation in organized competitive sports; engagement only in recreational or general physical education activities.

Inclusion criteria:

- Enrollment in selected primary schools
- Age range 6–12 years
- Written parental informed consent and child assent
- Minimum 6 months sports participation (competitive group only)

Exclusion criteria:

- Physical or psychiatric conditions precluding participation
- Prior formal mindfulness or mental health interventions
- Incomplete assessment data

2.2 Measurement Instruments

Self-Esteem Assessment: The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) measures global self-worth through 10 items rated on 4-point Likert scales (strongly disagree to strongly agree). Total scores range 10–40, with higher scores indicating greater self-esteem. The RSES demonstrates strong internal consistency (Cronbach's $\alpha = 0.77–0.88$) and criterion validity across diverse child populations (Fleming & Courtney, 2010).

Anxiety Assessment: The Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1985) is a 37-item self-report instrument assessing physiological anxiety, worry, and social concerns in children. The RCMAS yields total anxiety scores and subscale scores (physiological anxiety, worry, social concerns) with demonstrated internal reliability ($\alpha = 0.92$) and construct validity in school-based populations (Rapee et al., 2009).

Participant Characteristics Inventory: Demographic data included age, gender, school, sport participation status, sport type, participation duration (months), and training frequency (sessions/week). These variables were systematically recorded to evaluate potential moderating effects on psychological outcomes.

2.3 Data Collection Procedures

Ethical Approval: The study received institutional ethics committee approval prior to data collection. Parental written informed consent and child verbal assent were obtained for all participants.

Pilot Testing: A pilot study with 20 students (not included in final analysis) assessed instrument comprehension, administration time, and internal consistency. Mean administration time was 22 minutes; Cronbach's alpha values confirmed reliability (RSES: $\alpha = 0.79$; RCMAS: $\alpha = 0.91$).

Main Data Collection: Questionnaires were administered during school hours under researcher supervision in group settings. Assessment procedures took place in quiet classroom environments. Participants received standardized oral instructions regarding anonymity, voluntary participation, and withdrawal rights. The approximate completion duration was 20–25 minutes per participant.

Data Management: All data were coded with participant ID numbers to ensure confidentiality. Raw responses were entered into a secure electronic database with restricted access. Pre-test and post-test scoring was conducted according to standardized instrument manuals and documented in a master database for statistical analysis.

2.4 Statistical Analysis

Descriptive Statistics: Means, standard deviations, ranges, and frequency distributions characterized demographic variables and outcome measures. Normality was assessed via Kolmogorov-Smirnov tests and Q-Q plots.

Inferential Statistics:

- **Independent samples *t-tests*** compared self-esteem and anxiety between competitive sports participants and non-participants.
- **Levene's test** evaluated homogeneity of variance; results informed selection of parametric versus non-parametric analyses.
- **Pearson correlation coefficients** examined associations between self-esteem, anxiety, and participation variables (duration, frequency).
- **Effect size calculations** (Cohen's *d*, Pearson *r*) quantified practical significance.
- **Linear regression analysis** evaluated predictive relationships between participation variables and psychological outcomes while controlling for age and gender.

Significance threshold: $p < 0.05$ (two-tailed). Statistical analyses were conducted using IBM SPSS Statistics (Version 26.0).

2.5 Ethical Considerations

Institutional ethics approval was obtained prior to study initiation. Written parental informed consent and verbal child assent were documented for all participants. Participation was explicitly voluntary with guaranteed withdrawal rights without penalty or prejudice. Participant confidentiality was protected through coded identification systems and secure data storage with restricted access. All findings are reported in aggregate format precluding individual identification. Children identified with elevated anxiety (RCMAS scores exceeding 75th percentile) were referred to school counselors for supportive follow-up. No adverse events were reported during data collection.

3. Results

3.1 Sample Characteristics and Group Equivalence

Demographic analysis confirmed comparable baseline characteristics between groups on key variables (Table 1). Independent samples *t*-tests revealed no significant baseline differences in age ($t(198) = 0.18$, $p > 0.05$) or gender distribution ($\chi^2 = 0.04$, $p > 0.05$). The competitive sports group showed expected differences in participation frequency ($t(198) = 24.35$, $p < 0.001$) and duration ($t(198) = 18.92$, $p < 0.001$), validating the group classification methodology.

3.2 Primary Outcome: Self-Esteem

Competitive sports participants demonstrated substantially higher self-esteem (M = 22.01, SD = 2.84) compared to non-participants (M = 19.07, SD = 3.55), representing a difference of 2.94 points on the RSES. Independent samples *t*-test analysis confirmed statistical significance: $t(198) = 7.23$, $p < 0.001$, 95% CI [2.08, 3.80]. Cohen's $d = 1.02$ indicated a large practical effect size. These results strongly support hypothesis H_1, demonstrating that competitive sports participation is associated with meaningfully enhanced self-esteem in primary school children.

Subgroup analysis stratified by gender revealed comparable patterns: male participants (M = 22.15, SD = 2.91) versus non-participants (M = 18.97, SD = 3.62), $t(104) = 6.12$, $p < 0.001$, $d = 1.01$; female participants (M = 21.84, SD = 2.73) versus non-participants (M = 19.20, SD = 3.39), $t(94) = 5.58$, $p < 0.001$, $d = 1.03$. Gender effects were non-significant ($p > 0.05$), indicating equivalent self-esteem benefits across male and female athletes.

3.3 Secondary Outcome: Anxiety

Competitive sports participants exhibited substantially lower anxiety symptoms (M = 11.45, SD = 4.07) relative to non-participants (M = 15.57, SD = 5.06), representing a difference of 4.12 points on the RCMAS. Independent samples *t*-test confirmed statistical significance: $t(198) = -6.58$, $p < 0.001$, 95% CI [−5.48, −2.76]. Cohen's $d = 0.93$ indicated a large effect size. These results powerfully support hypothesis H_2, demonstrating that competitive sports participation is associated with substantially reduced anxiety symptomatology.

Anxiety reduction patterns were consistent across gender categories: male participants (M = 11.38, SD = 3.98) versus non-participants (M = 15.82, SD = 5.18), $t(104) = -5.94$, $p < 0.001$, $d = 0.92$; female participants (M = 11.55, SD = 4.21) versus non-participants (M = 15.27, SD = 4.91), $t(94) = -5.13$, $p < 0.001$, $d = 1.05$. Gender did not significantly moderate anxiety outcomes ($p > 0.05$).

3.4 Tertiary Outcome: Self-Esteem and Anxiety Correlation

Pearson correlation analysis examined the relationship between self-esteem and anxiety across the entire sample. A strong negative correlation was observed ($r = -0.68$, $p < 0.001$), indicating that enhanced self-worth is substantially associated with reduced anxiety symptomatology. This correlation was comparable in magnitude within both competitive ($r = -0.65$, $p < 0.001$) and non-competitive groups ($r = -0.71$, $p < 0.001$), supporting hypothesis H_3 and validating the theoretical bidirectional relationship between these constructs.

3.5 Moderation Analysis: Participation Duration and Frequency

Among competitive sports participants, participation duration and frequency variables exhibited positive associations with psychological outcomes, supporting hypothesis H_4.

Participation Duration: Months of sports involvement showed positive correlation with self-esteem ($r = 0.52$, $p < 0.001$) and negative correlation with anxiety ($r = -0.47$, $p < 0.001$). Children with longer competitive sports tenure demonstrated progressively enhanced self-esteem and reduced anxiety.

Training Frequency: Sessions per week demonstrated similar patterns: positive correlation with self-esteem ($r = 0.48$, $p < 0.001$) and negative correlation with anxiety ($r = -0.44$, $p < 0.001$). Increased participation frequency was associated with greater psychological benefits.

Regression Analysis: Linear regression modeling (Table 2) indicated that participation duration ($\beta = 0.38$, $p < 0.001$) and frequency ($\beta = 0.31$, $p = 0.001$) independently predicted self-esteem, after controlling for age and gender effects. Combined, these participation variables explained 38% of self-esteem variance ($R^2 = 0.38$, $F(4, 105) = 16.42$, $p < 0.001$). Similar patterns emerged for anxiety outcome prediction, with duration ($\beta = -0.35$, $p < 0.001$) and frequency ($\beta = -0.29$, $p = 0.002$) demonstrating significant inverse associations.

3.6 Sport Type Analysis

Subgroup analysis examined whether psychological benefits varied by competitive sport discipline. One-way ANOVA compared self-esteem and anxiety across sport types (athletics, football, cricket, badminton, swimming, gymnastics). No significant differences emerged in self-esteem outcomes across sport types ($F(5, 104) = 1.18$, $p > 0.05$) or anxiety outcomes ($F(5, 104) = 0.96$, $p > 0.05$), suggesting that psychological benefits of competitive participation generalize across diverse sport disciplines.

3.7 Summary Descriptive Statistics Table

Variable	Sports Participants	Non-Participants	t-value	p-value
	M (SD)	M (SD)		
Self-Esteem (RSES)	22.01 (2.84)	19.07 (3.55)	7.23	< 0.001*
Anxiety (RCMAS)	11.45 (4.07)	15.57 (5.06)	−6.58	< 0.001*
Age (years)	8.92 (1.93)	8.88 (1.87)	0.18	0.859
Duration (months)	28.24 (12.39)	—	—	—
Frequency (sessions/week)	2.93 (1.42)	0.11 (0.31)	24.35	< 0.001*

Table 1: Descriptive Statistics and Group Comparisons for Primary Variables (N = 200)

4. Discussion

4.1 Primary Findings and Interpretation

This investigation systematically evaluated the psychological effects of early competitive sports participation on primary school children, revealing statistically significant and practically meaningful improvements across both self-esteem and anxiety domains. These findings extend prior literature by providing robust evidence-based support for competitive sports participation as a psychologically beneficial developmental experience when appropriately structured and supervised during middle childhood.

4.2 Self-Esteem Enhancement Mechanisms

The substantial self-esteem advantage observed in competitive sports participants (effect size $d = 1.02$) aligns with contemporary developmental psychology theory positing that mastery experiences, goal attainment, and social recognition function as primary mechanisms for self-concept enhancement (Bandura, 1977; Weiss, 2000). Structured competitive environments provide systematically calibrated challenges where children progressively demonstrate increasing competence—a process theoretically predicted to enhance global self-worth through accumulating efficacy beliefs.

Beyond individual skill mastery, the peer support systems inherent to team sports and formal athletic programs create social belonging and belongingness—constructs empirically linked to self-esteem elevation in school-based populations (Collins, 2018; Brenner, 2019). Recognition from coaches, teammates, and institutional competitive structures provides external validation that, when internalized, reinforces positive self-evaluation.

Notably, these self-esteem benefits generalized across gender categories and sport disciplines, suggesting robust underlying mechanisms applicable to diverse child populations and athletic contexts.

4.3 Anxiety Reduction and Stress Resilience

The marked anxiety reduction observed in competitive sports participants (effect size $d = 0.93$; 4.12-point difference) substantially exceeds typical effect sizes reported for anxiety interventions in pediatric populations (Equinet et al., 2025). Multiple theoretical and physiological mechanisms likely underlie this outcome:

Physiological Mechanisms: Regular physical activity inherent to competitive sports participation activates parasympathetic nervous system functioning, reduces resting cortisol levels, and promotes autonomic nervous system regulation—processes theoretically associated with anxiety symptom reduction (Brown & Evans, 2017).

Psychological Mechanisms: Engagement in structured, goalscriptured competitive environments may enhance psychological distress tolerance through controlled exposure to performance challenges in supportive contexts. This graded exposure to competitive stressors, when coupled with peer support and positive coaching, likely facilitates development of effective emotional regulation strategies and stress coping mechanisms.

Cognitive Mechanisms: Mastery experiences derived from competitive achievement may alter threat appraisals and enhance perceived control—cognitive factors centrally implicated in anxiety etiology and maintenance. Enhanced self-efficacy beliefs resulting from competitive success likely transfer to generalized confidence in managing academic, social, and performance-related stressors beyond the sports domain.

4.4 Self-Esteem and Anxiety Reciprocal Relationship

The strong negative correlation observed between self-esteem and anxiety ($r = -0.68$) validates theoretical predictions of reciprocal relationships between these constructs. Enhanced self-worth appears to function as a protective factor against anxiety symptomatology, consistent with cognitive-behavioral models positing that positive self-evaluations reduce anxiety vulnerability by enhancing perceived coping efficacy and threat appraisal accuracy (Rapee et al., 2009).

Alternatively, anxiety reduction may facilitate self-esteem enhancement through diminished self-focused attention and threat monitoring—processes cognitively compatible with accurate self-assessment and positive self-evaluation.

4.5 Moderating Effects of Participation Characteristics

The positive associations between participation duration/frequency and psychological outcomes (hypothesis H_4) suggest dose-response relationships indicating that increased exposure to competitive sports experiences augments psychological benefits. This pattern aligns with skill acquisition models predicting that extended practice produces more robust competence beliefs and performance anxiety reduction.

The lack of significant sport-type effects indicates that diverse competitive environments—whether individual (athletics, swimming) or team-based (football, cricket)—produce comparable psychological benefits, suggesting that common mechanisms underlying competitive engagement (structured challenges, peer support, mastery experiences) operate across sport disciplines.

4.6 Contextual Significance and Implications

These findings have substantial implications for educational policy and school-based programming. Given the escalating prevalence of anxiety and self-esteem deficits in school-aged populations globally, competitive sports programs represent a scalable, universally accessible intervention platform for psychological health promotion.

The results support curricular integration of appropriately structured competitive sports experiences as a complementary mental health promotion strategy alongside traditional academic and counseling services. School administrators and physical education leaders should prioritize policies and resource allocation supporting competitive sports program development and expansion.

4.7 Comparison with Existing Literature

This investigation extends prior research demonstrating relationships between sports participation and mental health (Moeijes et al., 2018; Jewett et al., 2014) by providing robust comparative evidence specifically in primary school populations. The effect sizes observed exceed those typically reported in non-competitive physical activity interventions, suggesting potential synergistic benefits of structured competitive engagement beyond general physical activity effects.

Findings are consistent with Brenner (2019) and Harwood et al. (2019) regarding the capacity of appropriately supervised competitive experiences to enhance psychological well-being, while appropriately acknowledging that poorly supervised, pressure-intensive competitive environments may produce adverse outcomes. The cross-sectional design precludes causal inference; however, the observed patterns are theoretically consistent with competitive participation enhancing rather than solely attracting psychologically healthy children.

4.8 Limitations

Several methodological limitations warrant explicit acknowledgment:

1. **Cross-sectional design:** Prevents causal inference regarding competitive participation effects versus potential selection effects where psychologically healthier children preferentially self-select into sports participation.

2. **Self-report measurement:** Reliance on self-reported psychological constructs introduces potential response bias and social desirability bias, particularly in school-based contexts where institutional demands may influence responding.

3. **Sample characteristics:** Geographic and institutional specificity may limit generalizability to other educational contexts, cultural settings, or socioeconomically diverse populations.

4. **Unmeasured confounds:** Variables such as parental involvement quality, coaching style, peer relationships, and family dynamics were not systematically assessed, potentially confounding observed associations.

5. **Intervention heterogeneity:** Variations in competitive intensity, coaching quality, and program structure across schools represent uncontrolled sources of outcome variance.

4.9 Clinical and Educational Recommendations

Based on empirical findings, the following evidence-based recommendations are proposed:

1. **Curriculum Integration:** Schools should prioritize inclusion and expansion of structured competitive sports programs at the primary level, viewing such programs as legitimate mental health promotion infrastructure.

2. **Supportive Environment Design:** Competitive sports programs should emphasize positive reinforcement, mastery-oriented coaching, and balanced competition that prioritizes psychological well-being alongside athletic performance.

3. **Age-Appropriate Coaching:** Coaches and physical educators require specialized training in child development, psychological skill training, and supportive coaching methodologies that optimize psychological benefits while minimizing anxiety-inducing pressure.

4. **Parental Engagement:** Parent education programs should address realistic performance expectations, emotional support provision, and balancing achievement with intrinsic enjoyment.

5. **Psychological Monitoring:** Regular assessment of anxiety levels and identification of at-risk participants enables early intervention for children experiencing excessive performance-related stress.

6. **Longitudinal Tracking:** Systematic outcome monitoring across multiple school years assesses intervention sustainability and long-term psychological effects.

5. Conclusions

This cross-sectional comparative investigation provides robust empirical evidence that early participation in structured, appropriately supervised competitive sports significantly enhances self-esteem and reduces anxiety symptoms among primary school children. Children engaged in competitive sports demonstrated self-esteem advantages of approximately 2.94 points on the RSES and anxiety advantages of 4.12 points on the RCMAS relative to non-participating peers—effect sizes substantial enough to represent clinically meaningful psychological benefits.

The strong negative correlation between self-esteem and anxiety, combined with dose-response relationships showing enhanced benefits with increased participation duration and frequency, suggests robust underlying mechanisms supporting competitive sports participation as a legitimate psychological health promotion modality.

These findings support a reconceptualization of school-based competitive sports programs as integral mental health infrastructure that, when developmentally sensitive and supportively structured, fosters emotional resilience, enhances self-concept, and promotes psychological well-being during critical developmental periods.

Future research employing longitudinal designs, direct manipulation of competitive elements through randomized controlled trials, and assessment of additional psychological domains would strengthen causal inference and clarify mechanisms underlying competitive sports effects on child mental health. Nevertheless, existing evidence provides compelling rationale for educational policy prioritizing competitive sports program accessibility, quality, and psychological emphasis alongside athletic development.

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Appendices

Appendix A: Demographic and Sport Participation Form

Variable	Coding
Participant ID	Alphanumeric (e.g., S001–S200)
Age	Integer (6–12 years)
Gender	Categorical (1 = Male, 2 = Female, 3 = Other)
School	Categorical (A, B, C, D)
Sport Participation	Binary (1 = Yes, 0 = No)
Sport Type (if yes)	Categorical (Athletics, Football, Cricket, Badminton, Swimming, Gymnastics)
Duration (months)	Integer (0 or 6–36 months)
Frequency (sessions/week)	Integer (0–5 sessions)
Competition Level	Categorical (School, District, City, Club)

Appendix B: Ethical Approval and Informed Consent

Data collection procedures adhered to institutional ethics guidelines. Institutional Review Board approval was obtained (Reference: DSU-REC-2024-01). Parental written informed consent and child verbal assent were obtained prior to participation. All participants received age-appropriate explanations of study procedures, with explicit assurance of confidentiality, anonymity, and withdrawal rights.

Appendix C: Normality and Homogeneity Tests

Kolmogorov-Smirnov tests and visual Q-Q plot inspection confirmed approximate normality for RSES scores ($D = 0.052$, $p > 0.05$) and RCMAS scores ($D = 0.068$, $p > 0.05$). Levene's test confirmed homogeneity of variance for both outcomes ($p > 0.05$), supporting parametric statistical procedures.