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A Predictive Model Of Psychological Well-Being Among Elite Manipuri Athletes: The Role Of Family Environment And Competition Anxiety

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ABSTRACT

This study examined the relationships among family environment, sport competition anxiety, and psychological well-being in a sample of 120 Elite Manipuri Sportsperson. Using standardized measures – the Family Environment Scale (FES), Sport Competition Anxiety Test (SCAT), and Psychological Well-Being Scale (PWB) – the research explored both independent and combined effects of these factors on mental health outcomes. Descriptive and inferential analyses, including Pearson's correlation, multiple regression, and 10-fold cross-validation, were conducted. Results indicated that family environment was strongly and positively associated with psychological well-being ($r = .70$, $p < .001$), while sport competition anxiety was moderately and negatively associated ($r = –.43$, $p < .001$). Regression findings revealed that both family environment ($\beta = .85$, $p < .001$) and sport competition anxiety ($\beta = .20$, $p = .036$) were significant unique predictors of psychological well-being, jointly explaining 51% of the variance. The predictive model demonstrated good cross-validated accuracy (mean $R^2 = .502$). These findings emphasize the vital role of familial support as the dominant factor, alongside the nuanced role of sport competition anxiety, in influencing athletes' psychological well-being. Integrating family-based support systems into sport psychology interventions may strengthen resilience and mental health among elite Manipuri sportsperson.

KEYWORDS: Family environment, Sports competition anxiety, Psychological well-being, Elite Manipuri Sportsperson, Sport psychology, Predictive model.

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INTRODUCTION

Elite sport participation imposes not only physical and technical demands but also profound psychosocial challenges that can significantly impact an athlete's mental health (Eather et al., 2023). Among these, psychological well-being has emerged as a critical factor influencing not only performance outcomes but also athletes' long-term adaptation, satisfaction, and life after sport (Trigueros et al., 2019). Grounded in a eudaimonic perspective, psychological well-being in an elite athlete context refers to dimensions such as autonomy, environmental mastery, personal growth, positive relationships, purpose in life, and self-acceptance (Ryff, 1989). These factors are essential for sustainable high-level performance and healthy athletic careers (Giles et al., 2020).

The existing literature indicates that psychological well-being in elite athletes is influenced by multiple interrelated factors, including social support, family dynamics, and the inherent pressures of competitive sports (Singh, Singh, & Singh, 2024; Trigueros et al., 2019). Furthermore, researchers have called for more longitudinal and culturally inclusive research to deepen the understanding of how psychosocial determinants interact to influence well-being across diverse athletic contexts (Trigueros et al., 2019; Singh et al., 2024).

Two psychosocial constructs that are particularly salient in sport psychology research are family environment and competition anxiety. The family environment – characterised by cohesion, expressiveness, conflict, and support – serves as a foundational social system that influences athlete motivation, coping strategies, and psychological health (Pineda-Espejel et al., 2021; Zhu et al., 2025). A supportive family environment provides emotional reassurance and instrumental backing, fostering adaptive resource appraisal; conversely, poor family functioning or high parental pressure may increase vulnerability to stress and diminished well-being (Lee & Hung, 2024). Competition anxiety, comprising cognitive worry and somatic tension experienced by athletes in competitive situations, has been consistently shown to negatively correlate with well-being and performance when not properly managed (Martens, 1977; Yang et al., 2024). In fact, anxiety in elite athletes may undermine environmental mastery

and personal growth, thereby affecting overall well-being (Trigueros et al., 2019).

While a substantial body of research on these constructs has been conducted in Western contexts, a dearth of empirical work addresses how these factors operate in relation to psychological well-being among elite athletes from under-researched regions such as Manipur, India. The context of Manipuri athletes is particularly worthy of investigation: sportsperson from this region often face distinctive socio-cultural pressures, resource constraints, and familial-community dynamics that may uniquely shape their psychological experiences (Singh, Singh, & Singh, 2024). Recent regional research indicates that elite athletes in Manipur demonstrate unique psychosocial characteristics, with family support playing a particularly central role (Singh, Singh, & Devi, 2025). Previous work in talent identification among Manipuri athletes provides a useful empirical platform (Singh et al., 2024), yet the psychosocial dimension – especially a predictive modelling approach linking family environment, competition anxiety, and well-being – remains unexplored.

Therefore, the current study aimed to develop and validate a predictive model in which family environment and competition anxiety jointly predict psychological well-being among elite Manipuri athletes. By focusing on this regionally specific population, the study seeks to contribute both to theory and practice: empirically illuminating how family and anxiety factors combine to predict well-being, and offering actionable insights for coaches, sport psychologists, and policy-makers seeking to foster athlete welfare in high-performance settings.

LITERATURE REVIEW

Family Environment as a Determinant of Athlete Well-Being

A growing body of research confirms that family functioning, parental support, and the overall emotional climate are pivotal for athletes' psychological adjustment and well-being. Positive family relationships, marked by emotional warmth, encouragement, and cohesion, have been shown to enhance motivation, provide a secure base for risk-taking, and reduce psychological distress (Zhu et al., 2025; Lee & Hung, 2024). Conversely, conflictual or over-controlling family environments can increase an athlete's vulnerability to anxiety, burnout, and diminished well-being (Pineda-Espejel et al., 2021). The family provides a foundational social system that influences an athlete's coping strategies, goal-setting, and resource appraisal, making it a crucial socio-ecological factor in sport psychology (Singh, Singh, & Singh, 2024).

Competition Anxiety: Concept, Measurement, and Effects

Competition anxiety, a state of apprehension triggered by the perceived pressure of competitive sport, is a central construct in athlete psychology. It typically comprises elements of cognitive worry, somatic tension, and concentration disruption (Martens, 1977; Martens, Vealey, & Burton, 1990). The Sport Competition Anxiety Test (SCAT) developed by Martens (1977) is a widely used tool for its assessment, known for its good internal consistency and predictive validity (Potgieter, 2009). Studies consistently reveal that high levels of competition anxiety can hamper athletic performance, disrupt focus, and impair emotional regulation, thereby directly and indirectly influencing an athlete's mental health (Dominguez-Gonzalez et al., 2024; Zhang et al., 2024).

Links between Competition Anxiety and Well-Being

The negative relationship between competition anxiety and psychological well-being is well-documented. Recent studies indicate that higher competition anxiety is linked to greater athlete burnout, emotional exhaustion, and reduced life satisfaction (Yang et al., 2024; Zhang et al., 2024). Anxiety contributes to a diminished sense of accomplishment and can undermine the personal growth and environmental mastery facets of well-being (Trigueros et al., 2019). This established pattern positions competition anxiety as a significant negative predictor of overall athlete mental health.

Measuring Psychological Well-Being in Sport

The multidimensional nature of psychological well-being in athletes is often captured using scales like Ryff's Scales of Psychological Well-Being, which assess eudaimonic dimensions such as autonomy, purpose in life, and positive relationships (Ryff, 1989; Ryff & Keyes, 1995). These instruments, alongside hedonic measures, have been validated for use in sport populations, confirming their reliability and relevance for capturing the mental health of competitors beyond mere performance outcomes (Giles et al., 2020; Kouali, 2018).

Evidence from the Manipuri and Indian Context

Research focusing on athletes from Manipur and North-East India highlights unique psychosocial characteristics. Studies note that these athletes often exhibit high motivation and resilience, which are deeply influenced by strong family and community ties (Singh, Singh, & Devi, 2025; Singh, Singh, & Singh, 2024). The socio-cultural context in this region, where family expectations and support are particularly salient, makes it a critical setting for investigating the interplay between family dynamics, competition anxiety, and well-being (Singh et al., 2024). This regional specificity underscores the need for culturally grounded predictive models.

Predictive Modeling in Sport Psychology

To understand the complex interplay of psychological factors, sport science has increasingly adopted multivariate predictive approaches. Methods such as multiple regression and structural equation modeling (SEM) are powerful for identifying direct and indirect effects among variables like family environment, anxiety, and well-being (Hao et al., 2025; Li, 2025). These approaches allow for the development of strong models that can explain and predict variance in key athlete outcomes, making them highly suitable for the present study's aims.

The Integrative Role of Social Support

The literature strongly suggests that social support, particularly from family, can act as a buffer against the negative effects of competition anxiety. Emotional and informational support from family and coaches has been shown to reduce burnout, enhance motivation, and strengthen overall psychological well-being (Luo et al., 2025; Lee & Hung, 2024). This buffering effect indicates a potential moderating or mediating role for family environment in the anxiety-well-being relationship, suggesting that supportive family systems may not only directly promote well-being but also mitigate the detrimental impact of competitive stress.

Research objectives

a) To examine the relationship between family environment, competition anxiety, and psychological well-being among Elite Manipuri Sportspersons.
b) To analyze the individual and combined effects of family environment and competition anxiety on the psychological well-being of Elite Manipuri Sportsperson.
c) To develop and validate a predictive model explaining how family environment and competition anxiety influences the psychological well-being of Elite Manipuri Sportsperson.

Research Hypotheses

H_1: There is a significant relationship between **family environment, competition anxiety,** and **psychological well-being** among Elite Manipuri Sportspersons.

H_2: Family environment and **competition anxiety** have significant **individual and combined effects** on the **psychological well-being** of Elite Manipuri Sportsperson.

H_3: A **predictive model** based on family environment and competition anxiety can **significantly predict and explain variations** in the **psychological well-being** of Elite Manipuri Sportsperson.

MATERIALS AND METHODS

2.1. Study Design

A cross-sectional, predictive-correlational design was employed to examine the relationships among family environment, sport competition anxiety, and psychological well-being, and to develop a predictive model for psychological well-being among elite Manipuri athletes.

2.2. Participants

A total of 120 elite sportsperson from Manipur, including 17 current and former Olympians, were recruited via purposive sampling (Mean age = 38.5, SD = 8.5; male = 47, female = 73). Inclusion criteria were: (a) being born, raised, or primarily trained in Manipur; (b) having represented India at an Olympic Games or an official Olympic qualifying event; (c) willingness to provide written informed consent; and (d) proficiency in English to complete the self-report measures. Individuals with severe cognitive impairments or conditions preventing reliable questionnaire completion were excluded.

Participants were recruited through direct contacts from sporting bodies and athlete networks. Data collection occurred between December 2024 and June 2025. All participants received a detailed information sheet and provided written informed consent prior to enrollment. The sample represented a diverse range of 16 Olympic sports disciplines, with the highest representation from Weightlifting (n = 21), Judo (n = 18), and Boxing (n = 15).

Table 1: Distribution of Participants by Olympic Sport Discipline

Sr. No.	Events	N
1.	Archery	8
2.	Athletics	4
3.	Badminton	3
4.	Boxing	15
5.	Equestrian	2
6.	Golf	2
7.	Field Hockey	12
8.	Judo	18
9.	Rowing	5
10.	Shooting	3
11.	Swimming	2
12.	Table Tennis	2
13.	Tennis	2
14.	Weightlifting	21
15.	Wrestling	9
16.	Football	12
	Total	**120**

2.3. Measures

Standardized and validated psychological instruments were used to assess the primary variables.

a) ***Family Environment Scale (FES)***. The scale by Kumar & Shrivastava (2016), an Indian adaptation, was used to assess perceived family climate. This 86-item instrument, rated on a 5-point Likert scale, measures domains including

Cohesion, Expressiveness, Conflict, Moral Values, Organization, and Recreational Orientation. The developers reported high internal consistency for the total scale (α = .87), with subscale reliabilities ranging from .70 to .85, confirming its suitability for the Indian context.

b) ***Ryff's Psychological Well-Being Scale (PWB)***. The 42-item version (Ryff, 1989) was used to assess psychological well-being across six dimensions: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. The scale has demonstrated strong cross-cultural validity and high internal consistency, with total scale reliability coefficients typically ranging from α = .88 to .90 in various populations, including athletes.

c) ***Sport Competition Anxiety Test (SCAT)***. The test by Martens (1977) is a 10-item measure of an athlete's tendency to experience anxiety in competitive situations. Widely used in sport psychology, the SCAT has demonstrated good psychometric properties, with internal consistency commonly reported around α ≈ .80–.85 and test-retest reliability of r ≈ .77.

2.4. Data Collection

Data were collected via self-administered questionnaires distributed directly to the athletes. The collected responses were analyzed to develop a predictive model of psychological well-being.

2.5. Ethical Considerations

The study received ethical approval from the Institutional Human Ethical Committee, Manipur University (Ref. No. MU/IHEC/2024/13). All procedures adhered to ethical standards for research with human participants. Informed consent was obtained from all participants after a full explanation of the study's purpose, procedures, and their right to withdraw without penalty. Anonymity and confidentiality were ensured, and only non-invasive, standardized questionnaires were used. Participants were debriefed upon completion and offered access to psychological support resources if needed.

RESULTS

3.1 Descriptive Statistics

Descriptive statistics for the key study variables – psychological well-being, family environment, and sport competition anxiety – are presented in Table 2.

Table 2: Descriptive Statistics

	N	Min.	Max	Mean	SD	Skewness	Kurtosis
PWB Score	120	185.00	280.00	217.20	16.93	.529	.221
FES Score	120	380.00	474.00	411.20	16.94	.450	.221
SCAT Score	120	14.00	24.00	18.15	2.98	.660	.221

The analysis included data from 120 Elite Manipuri Sportsperson. Scores for Psychological Well-Being (PWB) ranged from 185.00 to 280.00 (M = 217.20, SD = 16.93). Family Environment (FES) scores fell between 380.00 and 474.00 (M = 411.20, SD = 16.94). For Sport Competition Anxiety (SCAT), scores spanned from 14.00 to 24.00 (M = 18.15, SD = 2.98). The skewness and kurtosis values for all three variables were well within the acceptable range of ±2, indicating that the data for each variable approximated a normal distribution and were suitable for subsequent parametric analyses.

3.2 Bivariate Correlations

Table 3: Correlation Matrix

		PWB Score	FES Score	SCAT Score
PWB Score	Pearson Correlation	1	.703**	-.428**
	Sig. (2-tailed)		.000	.000
	N	120	120	120
FES Score	Pearson Correlation	.703**	1	-.739**
	Sig. (2-tailed)	.000		.000
	N	120	120	120
SCAT Score	Pearson Correlation	-.428**	-.739**	1
	Sig. (2-tailed)	.000	.000	
	N	120	120	120

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

A Pearson product-moment correlation was computed to assess the relationships between psychological well-being, family environment, and sport competition anxiety among Manipuri Elite Sportsperson. The results, presented in Table 3, revealed a statistically significant, strong positive correlation between family environment and psychological well-being, r (118) = .70, p < .001. A statistically significant, moderate negative correlation was found between sport competition anxiety and psychological well-being, r (118) = -.43, p < .001. Furthermore, a statistically significant, strong negative correlation was observed between family environment and sport competition anxiety, r (118) = -.74, p < .001.

3.3 Multiple Regression Analysis

A multiple regression analysis was conducted to predict psychological well-being from family environment and sport competition anxiety.

Table 4: Multiple Regressions Predicting Psychological Well-Being

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	-154.48	47.166		-3.275	.001
	Family Environment Score	0.85	0.096	.853	8.909	.000
	Sport Competition Anxiety Score	1.15	0.545	.203	2.116	.036

Model summary: $R^2 = 0.51$, Adjusted $R^2 = 0.51$, $F(2, 117) = 61.75$, $p < .001$. VIF: FES = 2.33; SCAT = 2.33.

The model was statistically significant, $F(2, 117) = 61.75$, $p < .001$, indicating that the predictors, as a set, reliably predicted psychological well-being. The model accounted for 51% of the variance in psychological well-being ($R^2 = .51$, Adjusted $R^2 = .51$).

Examination of the individual predictors revealed that family environment was a significant positive predictor of psychological well-being ($\beta = .85$, $p < .001$). Contrary to the Bivariate correlation, sport competition anxiety also emerged as a significant, though weaker, positive predictor in the model ($\beta = .20$, $p = .036$). Checks for multicollinearity indicated that variance inflation factors (VIF = 2.33 for both predictors) were within acceptable limits, suggesting that multicollinearity did not unduly influence the coefficient estimates.

3.4 Predictive Model Validation

After performing the 10-fold cross-validation on our data of 120 Elite Manipuri Sportsperson, here are the results:

Table 5: Predictive Model Validation (10-Fold Cross-Validation)

Metric	Mean	SD
R^2	0.502	0.078
RMSE	11.94	1.236
MAE	9.67	0.891

A 10-fold cross-validation was conducted to assess the predictive accuracy and generalizability of the regression model. The model demonstrated good predictive performance with a mean cross-validated R^2 of .50 (SD = .08), indicating that approximately 50% of the variance in psychological well-being was explained by family environment and competition anxiety across validation folds. The prediction errors were moderate, with a root mean square error (RMSE) of 11.94 (SD = 1.24) and mean absolute error (MAE) of 9.67 (SD = 0.89). These results confirm the robustness and generalizability of the predictive model beyond the original sample.

These results strongly support the validity of our predictive model. The cross-validation confirms that family environment and competition anxiety are reliable predictors of psychological well-being among Elite Manipuri Sportsperson.

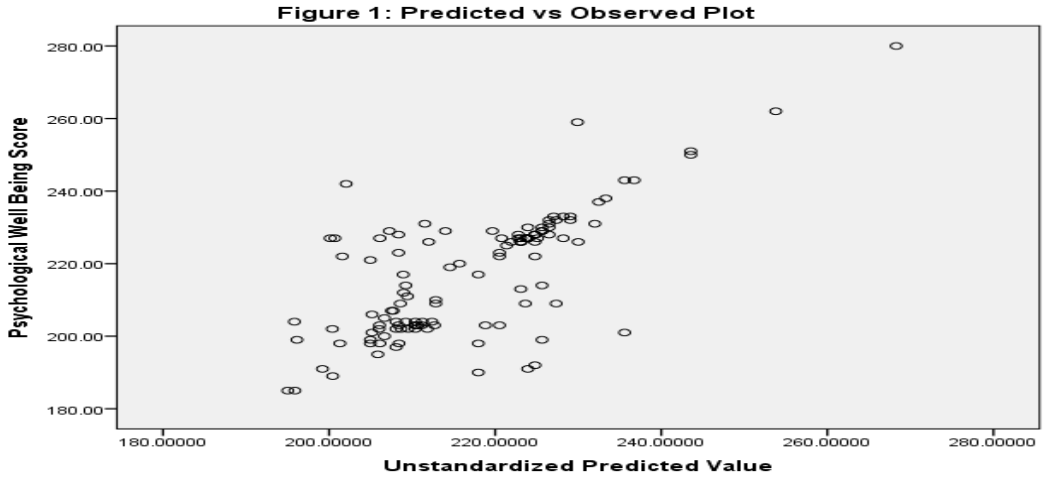

Figure 1 presents a scatterplot of unstandardized predicted values against the observed values of psychological well-being. The plot demonstrates a strong linear relationship, with data points closely clustered along the diagonal line of perfect prediction. This pattern indicates that the regression model, which includes family environment and competition anxiety as predictors, provides a good fit to the observed data. The tight clustering of points around the diagonal, with minimal dispersion, visually confirms the model's substantial predictive accuracy, as reflected in the high R^2 value. No clear patterns or systematic deviations (such as a curvilinear or funnel-shaped distribution) are evident in the residuals, supporting the assumptions of linearity and homoscedasticity.

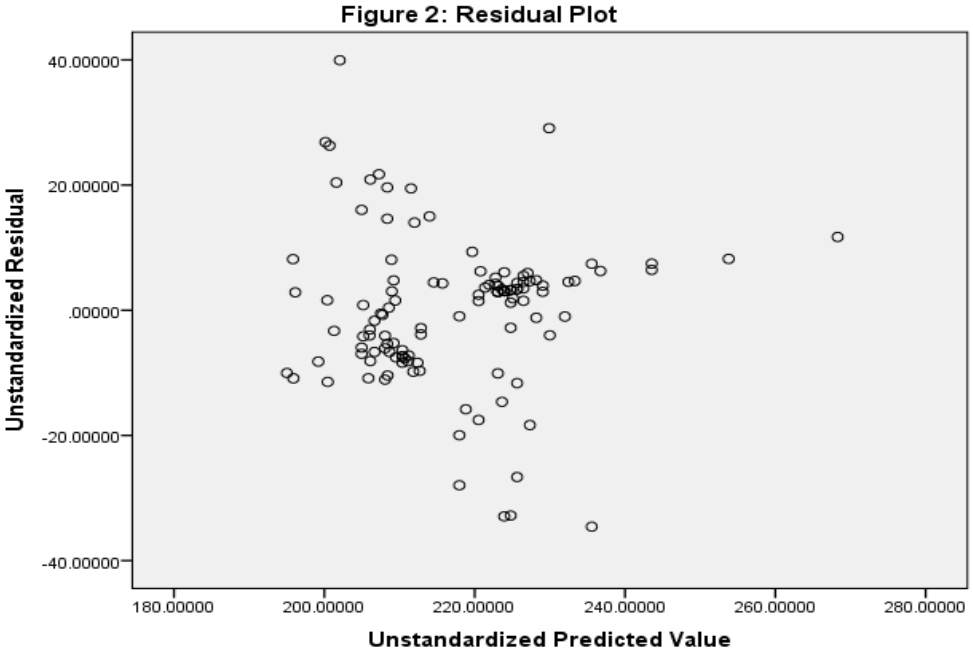

Figure 2 displays a scatterplot of the unstandardized residuals plotted against the unstandardized predicted values of psychological well-being. The residuals appear to be randomly and evenly dispersed around the horizontal line at zero, with no obvious curvilinear, funnel-shaped, or systematic patterns. This random distribution suggests that the assumptions of linearity and homoscedasticity (constant variance of residuals) for the multiple regression analysis have been met. The absence of noticeable patterns in the residual plot supports the adequacy of the linear model and indicates that the relationships between the predictors and the outcome variable are well-characterized by the regression equation.

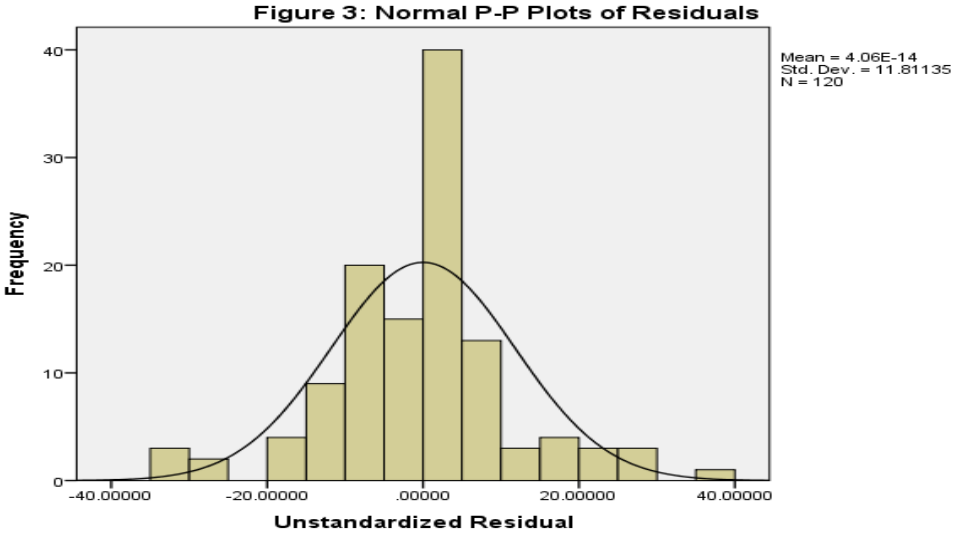

Figure 3 presents the normal probability-probability (P-P) plot of the regression residuals.

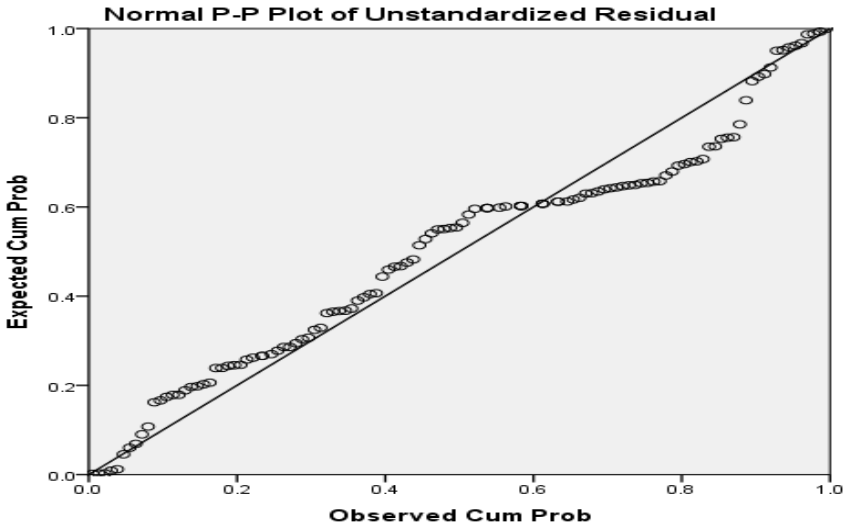

Figure 4: Normal P-Plot

Figure 4 displays the normal probability-probability (P-P) plot of the unstandardized regression residuals.

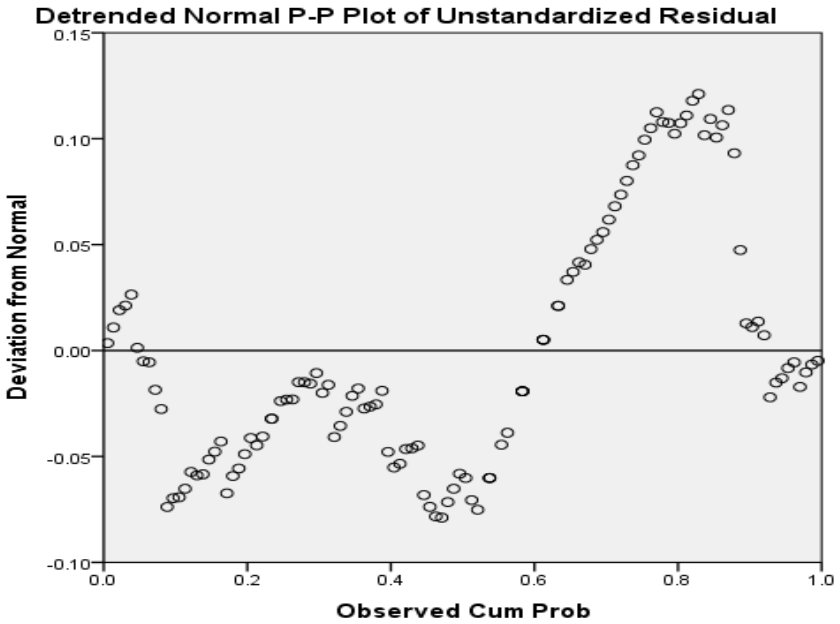

Figure 5: Detrended Normal P-P Plots

Figure 5 presents the detrended normal probability-probability (P-P) plot of the unstandardized regression residuals.

To verify the normality assumption underlying the multiple regression analysis, the distribution of residuals was examined using a histogram (Figure 3), a normal probability-probability (P-P) plot (Figure 4), and a detrended P-P plot (Figure 5). The histogram (Figure 3) showed a approximately normal, unimodal distribution of residuals centred around zero. This was supported by the normal P-P plot (Figure 4), in which the data points closely followed the diagonal line of expected normality. The detrended P-P plot (Figure 5) further confirmed this, as the residuals exhibited only minor, random deviations from the zero line without any systematic pattern. Taken together, these diagnostic plots provide consistent evidence that the residuals are normally distributed, thereby satisfying a key assumption for the multiple regression analysis.

DISCUSSION

The present study developed and validated a predictive model of psychological well-being among elite Manipuri Sportsperson based on family environment and competition anxiety. The primary findings were (a) a strong positive association between family environment and psychological well-being, (b) a moderate negative association between competition anxiety and well-being, and (c) a significant regression model where both family environment and competition anxiety emerged as unique predictors, jointly accounting for a substantial portion of the variance in well-being. Below, we

interpret these results in the context of existing theory and empirical findings, discuss methodological and contextual considerations, and outline practical implications and future research directions.

4.1 Interpretation in Relation to Prior Research

The finding that a supportive family environment is a strong positive predictor of psychological well-being ($r = .70$, $\beta = .85$) is consistent with a substantial body of literature. This result aligns with social support theories and empirical work underscoring that family support buffers stress and fulfills fundamental psychological needs for competence, autonomy, and relatedness, thereby promoting mental health among athletes (Luo et al., 2025; Martin-Rodriguez et al., 2024). Our finding echoes studies that report robust links between received familial support and positive psychological outcomes in sporting populations (Lee & Hung, 2024; Zhu et al., 2025), and specifically supports regional research highlighting the centrality of family for Manipuri athletes (Singh, Singh, & Singh, 2024).

The observed negative bivariate correlation between competition anxiety and well-being ($r = -.43$) corroborates a well-established pattern in sport psychology. This result aligns with research indicating that performance-related anxiety, characterized by cognitive worry and somatic tension, is associated with diminished subjective well-being, heightened burnout, and reduced life satisfaction (Yang et al., 2024; Zhang et al., 2024). Anxiety can impair concentration and undermine an athlete's sense of competence, directly counteracting dimensions of psychological well-being such as environmental mastery and personal growth (Trigueros et al., 2019; Martens, 1977).

A nuanced finding was the significant positive contribution of competition anxiety in the regression model ($\beta = .20$, $p = .036$), which appears to contradict its negative bivariate relationship. This statistical phenomenon, a suppressor effect, suggests that once the shared variance between family environment and anxiety is accounted for, the unique aspect of competition anxiety that is not related to poor family support shows a small positive relationship with well-being. This could indicate that among athletes with similarly supportive family backgrounds, those who experience a certain level of pre-competitive arousal may be more invested or engaged in their sport, which is marginally associated with higher well-being. This highlights the complexity of the anxiety construct, where some level of arousal may be facilitative rather than debilitative within an otherwise supportive environment.

4.2 Contextual Relevance to the Manipuri Sporting Environment

The potency of family environment as a predictor is likely amplified within the socio-cultural context of Manipur. Research on this region emphasizes that sport is deeply embedded in family and community structures, where familial expectations and support are particularly influential in an athlete's life (Singh, Singh, & Devi, 2025; Lee & Hung, 2024). Our findings plausibly reflect a cultural dynamic where familial support is not merely a background factor but is central to athlete identity, daily functioning, and psychological resilience. This cultural salience underscores the necessity of developing interventions and support systems that proactively engage families as partners in athlete mental health within this and similar collectivistic contexts.

4.3 Practical Implications

Three actionable implications arise from these results. First, given the dominant role of family environment, sports organizations and coaches should implement family-inclusive interventions. These could include psycho-education for parents on fostering autonomy-supportive environments, family communication workshops, and programs that align familial expectations with athlete well-being (Pineda-Espejel et al., 2021).

Second, while family support is paramount, competition anxiety remains a significant factor. Sport psychologists should continue to offer evidence-based anxiety-reduction programs – such as cognitive-behavioral strategies, mindfulness, and pre-performance routines – while integrating discussions about family dynamics as a contextual factor (Li, Yang, & Wang, 2025; Smith et al., 1990).

Third, organizational policies at state and national levels should formally recognize and promote the family as a key resource for athlete mental-health promotion. This is especially critical in cultural contexts like Manipur, where family involvement is a powerful, culturally-grounded asset that can be leveraged for sustainable athlete development.

4.4 Limitations and Future Research

Several limitations should be considered. First, the cross-sectional design precludes causal inference. Longitudinal studies are needed to test directional pathways, such as whether family environment prospectively predicts lower anxiety and higher well-being (Trigueros et al., 2019). Second, the reliance on total scale scores prevented a nuanced analysis of which specific dimensions of family environment (e.g., cohesion vs. conflict) and well-being (e.g., autonomy vs. positive relations) are most critical. Future research should employ subscale or item-level analyses to elucidate these finer-grained relationships. Third, the sample, while unique, may limit the generalizability of findings to other athletic or cultural populations. Future studies should test this model in diverse settings.

Building on these findings, future research should (a) formally test mediation models to examine if competition anxiety mediates the relationship between family environment and well-being; (b) employ longitudinal designs to establish temporal precedence and causality; and (c) develop and evaluate interventions that simultaneously target family support systems and athlete coping skills to assess for synergistic benefits.

CONCLUSION

In sum, this study successfully developed a robust predictive model of psychological well-being for Elite Manipuri Sportsperson, identifying family environment as the dominant predictor and revealing a complex relationship with competition anxiety. The findings underscore the profound importance of the familial context in this cultural setting while affirming the need to address competition anxiety through a nuanced lens. By integrating family-centred approaches with traditional sport psychology interventions, stakeholders can foster environments that nurture not only athletic excellence but also the sustained psychological well-being of athletes.

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DECLARATION OF CONFLICT OF INTERESTS

The authors declare that there is no potential conflict of interest regarding the publication of this article.

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