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Psychological characteristics by playing position in collegiate women soccer players

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Abstract

The present study was conducted to investigate positional differences in key psychological attributes such as Coping with Adversity, Coachability, Concentration, and Confidence & Achievement Motivation among collegiate women soccer players, using a statistical significance level of $\alpha = 0.05$. The analysis, performed on a sample of 75 athletes divided equally into defenders, midfielders, and forwards, employed a one-way ANOVA followed by Tukey's HSD post-hoc test. The results demonstrated statistically robust differences ($p < .0001$) across all four psychological constructs. Post-hoc analysis clarified that defenders significantly outperformed both midfielders and forwards in Coping with Adversity and Concentration. Conversely, midfielders displayed a distinct psychological profile characterized by significantly higher Coachability compared to both defenders and forwards. Meanwhile, forwards were distinguished by their psychological makeup, exhibiting markedly greater Confidence & Achievement Motivation than players in both defensive and midfield roles. This investigation conclusively establishes that unique psychological profiles are intrinsically linked to specific playing positions in women's collegiate soccer, underscoring the potential efficacy of implementing position-specific mental skills training to optimize individual athletic development and collective team efficacy.

Keywords: Sport psychology, psychological characteristics, coping, coachability, concentration, confidence and achievement motivation

Introduction

Soccer's position as the globe's most popular sport is paralleled by a significant surge in female participation worldwide (FIFA, 2019). Excelling in the sport requires a sophisticated blend of technical, tactical, and physical capabilities. Yet, performance cannot be fully understood through physiology and technique alone; psychological factors are now widely acknowledged as crucial for both athlete development and competitive success (McCarthy *et al.*, 2020) ^[10]. A recent scoping review underscores that, despite a growing body of work, psychological research in women's soccer is still underdeveloped relative to the male game, leaving numerous questions unresolved (McGuinness *et al.*, 2022) ^[11].

Research has consistently demonstrated that physical performance characteristics differ substantially across playing positions in soccer (Sarmiento *et al.*, 2021) ^[15]. This is supported by a systematic scoping review confirming that training methodologies must be tailored to the distinct demands of defensive, midfield, and attacking roles (Lago-Fuentes *et al.*, 2022) ^[9]. However, while the understanding of these physical and technical positional requirements has advanced, the investigation into corresponding psychological differences among female soccer players represents a notable void in the scientific literature.

Specific psychological constructs are fundamental to athletic achievement. Sport confidence, for example, is a multifaceted and dynamic state encompassing belief in one's skills, decision-making, and capacity to overcome challenges (Vealey & Chase, 2008) ^[20]. The skill of coping with adversity is equally critical, with studies on mental skills training (MST) demonstrating that structured interventions can boost intrinsic motivation and help regulate performance-related stress (Middleton *et al.*, 2021) ^[12]. Furthermore, mental toughness and resilience are recognized as vital for athletes to perform under pressure, recover from mistakes, and sustain concentration (Coulter *et al.*, 2016) ^[3].

This study aims to address this identified gap by systematically investigating whether key psychological attributes namely Coping with Adversity, Coachability, Concentration, and

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Confidence & Achievement Motivation, vary among defenders, midfielders, and forwards in collegiate women's soccer. Building upon the provided statistical results, this paper will test the hypothesis that the psychological profiles of these positional groups are significantly distinct. Identifying such differences is a critical prerequisite for developing targeted, position-specific mental skills training, which can ultimately optimize individual player growth and collective team effectiveness.

Literature Review

Soccer's dynamic nature demands significant psychological fortitude alongside physical capabilities, characterized by intermittent high-intensity activities that require mental resilience for competitive success (Sarmiento *et al.*, 2021) [15]. The complex environment of the sport necessitates well-developed psychological attributes, with research demonstrating that applied mental skills training significantly enhances intrinsic enjoyment, self-confidence, and athletic performance while reducing anxiety in collegiate women soccer players (Middleton *et al.*, 2021) [12].

The theoretical foundation for psychological differences among players stems from the unique tactical demands of each position (Lago-Fuentes *et al.*, 2022) [9]. Defenders typically require exceptional concentration and game-reading capabilities for neutralizing opposition attacks, while midfielders need high coachability and tactical understanding to effectively link defense and attack. Forwards generally demonstrate exceptional confidence, resilience, and achievement motivation necessary for scoring goals, suggesting distinct psychological profiles across positions that merit detailed investigation.

Four crucial psychological constructs form the focus of this investigation: coping with adversity represents essential strategies for managing competitive stress, with problem-solving approaches proving most effective (Coulter *et al.*, 2016) [3], while coachability reflects receptiveness to instruction vital for complex roles. Concentration remains critical for preventing opponent scoring opportunities, and confidence combined with achievement motivation encompasses both belief in one's abilities and the persistent drive for success, considered vital for player development (Veale & Chase, 2008) [20].

Methodology

This study utilized a cross-sectional design to compare psychological attributes among 75 female collegiate soccer players, equally distributed across defender, midfielder, and forward positions. Data on four key variables such as Coping with Adversity, Coachability, Concentration, and Confidence & Achievement Motivation, were collected via a standardized inventory and analyzed using one-way ANOVA, with Tukey's HSD post-hoc tests applied to identify specific positional differences where significant effects were found.

Selection of Subjects

This study employed a cross-sectional, comparative design to examine psychological differences among female

collegiate soccer players. The sample was collected of 75 athletes actively competing for the Sports Council College Soccer Centre in Kerala. Participants were distributed equally across three primary outfield positions: defenders (n=25), midfielders (n=25), and forwards (n=25). This sampling strategy ensured robust between-group comparisons while maintaining homogeneity by excluding goalkeepers, whose positional demands differ significantly from outfield players. All participants were actively engaged in competitive collegiate soccer during the time of data collection.

Selection of Variables

The investigation focused on four key psychological attributes identified from the literature as critical to soccer performance. These included Coping with Adversity, defined as the ability to effectively manage setbacks, mistakes, and pressure during competition; Coachability, representing receptiveness to instruction, feedback, and tactical guidance from coaches; Concentration, meaning the capacity to maintain focus and attention throughout match duration; and Confidence & Achievement Motivation, encompassing both belief in one's abilities and the drive to achieve success while overcoming challenges. These specific variables were selected based on their established importance in athletic performance and their particular relevance to the complex demands of soccer, where psychological factors often differentiate successful performers at competitive levels.

Collection of Data and Test Administration

Data collection utilized a standardized psychological inventory designed to measure the four target constructs, providing quantitative scores for each attribute. The assessment was administered during the competitive season in a controlled environment to ensure consistency and minimize external distractions. Participants completed the inventory independently under research team supervision, with standardized instructions provided to ensure response reliability. The administration process emphasized anonymity and confidentiality to encourage honest responding, adhering to established ethical guidelines for research with human subjects. Raw scores obtained from the inventory were systematically compiled for subsequent statistical analysis.

Analysis of results

The data were analyzed using a series of one-way Analyses of Variance (ANOVA) for each of the four dependent variables (Coping with Adversity, Coachability, Concentration, and Confidence & Achievement Motivation). The independent variable was playing position (Defender, Midfielder, Forward). For all analyses, a significance level of $\alpha = 0.05$ was set. In cases where the ANOVA revealed a statistically significant result, Tukey's Honest Significant Difference (HSD) post-hoc test was conducted to identify which specific positional pairs differed significantly from one another. This method controls for Type I error when making multiple comparisons.

Table 1: Descriptive Profile of PSI Scores by Playing Position among soccer players

Variable	Position	Mean	SD
Coping with Adversity	Defenders	10.88	0.14
	Midfielders	10.04	0.14
	Forwards	10.28	0.08
Coachability	Defenders	9.83	0.09
	Midfielders	10.86	0.10
	Forwards	9.83	0.08
Concentration	Defenders	10.62	0.13
	Midfielders	9.77	0.11
	Forwards	9.82	0.08
Confidence& Achievement Motivation	Defenders	9.78	0.11
	Midfielders	9.82	0.09
	Forwards	10.99	0.11

Table 1 shows that defenders scored highest in coping with adversity and concentration, midfielders in coachability, and forwards in confidence and achievement motivation. This

indicates that psychological skills vary by playing position, reflecting the distinct mental demands of each role in soccer.

Table 2: Combined Descriptive and ANOVA Coping with Adversity among soccer players

Position	N	Mean	SD	Source	df	Sum Sq	Mean Sq	F value	p-value
Defenders	25	10.88	0.14	Between Groups	2	18.51	9.26	103.93	<0.001*
Midfielder	25	10.04	0.14	Within Groups	72	19.24	0.09		
Forwards	25	10.28	0.08	Total	74	37.75			

Table 2 ANOVA revealed significant differences in Coping with Adversity ($F(2,72)=103.93$, $p<0.001$). Post-hoc analysis showed defenders ($M=10.88$, $SD=0.14$) scored

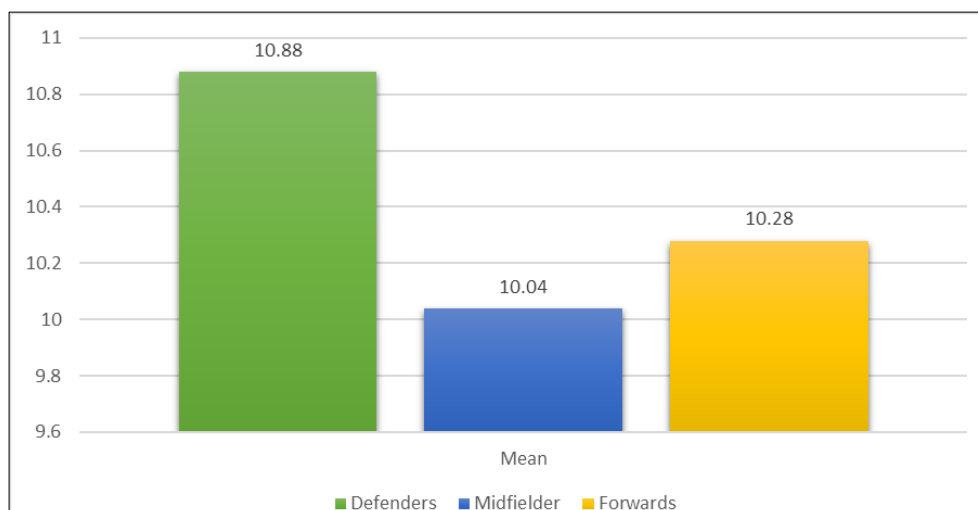
significantly higher than both midfielders ($M=10.04$, $SD=0.14$) and forwards ($M=10.28$, $SD=0.08$), and forwards scored significantly higher than midfielders.

Table 3: Post-Hoc Analysis Coping with Adversity among women soccer players

Forwards	Midfielders	Defenders	Mean Diff	p-value
10.28	10.04	–	0.24	<0.001*
10.28	–	10.88	-0.60	<0.001*
–	10.04	10.88	-0.84	<0.001*

Table 3 the post-hoc analysis revealed that all pairwise comparisons between playing positions showed statistically significant differences in Coping with Adversity scores ($p < 0.001$). The analysis demonstrates a clear hierarchy in

coping ability: Defenders (10.88) showed significantly higher coping ability than both Forwards (10.28) and Midfielders (10.04), while Forwards also demonstrated significantly better coping ability than Midfielders.

**Fig 1:** Coping with Adversity among women soccer players**Table 4:** Combined Descriptive and ANOVA Coachability among soccer players

Position	N	Mean	SD	Source	df	Sum Sq	Mean Sq	F value	p-value
Defenders	25	9.83	0.09	Between Groups	2	18.51	9.26	103.93	<0.001*
Midfielders	25	10.86	0.10	Within Groups	72	6.41	0.09		
Forwards	25	9.83	0.08	Total	74	24.92			

Table 4 presents the descriptive and ANOVA results for *Coachability* among soccer players by position. Midfielders recorded the highest mean score ($M = 10.86$, $SD = 0.10$), while defenders and forwards had identical mean scores ($M = 9.83$). The ANOVA results revealed a significant

difference in coachability across playing positions ($F = 103.93$, $p < 0.001$), indicating that midfielders are significantly more coachable compared to defenders and forwards.

Table 5: Post-Hoc Analysis of Coachability among soccer players

Forward	Midfielder	Defender	Mean Diff	p-value
9.83	10.86	–	-1.03	<0.001*
9.83	–	9.83	0.00	1.000
–	10.86	9.83	1.03	<0.001*

Table 5 The ANOVA revealed significant differences in Coachability ($F(2,72)=103.93$, $p<0.001$). Post-hoc analysis showed midfielders ($M=10.86$, $SD=0.10$) scored

significantly higher than both defenders ($M=9.83$, $SD=0.09$) and forwards ($M=9.83$, $SD=0.08$), while no significant difference existed between defenders and forwards.

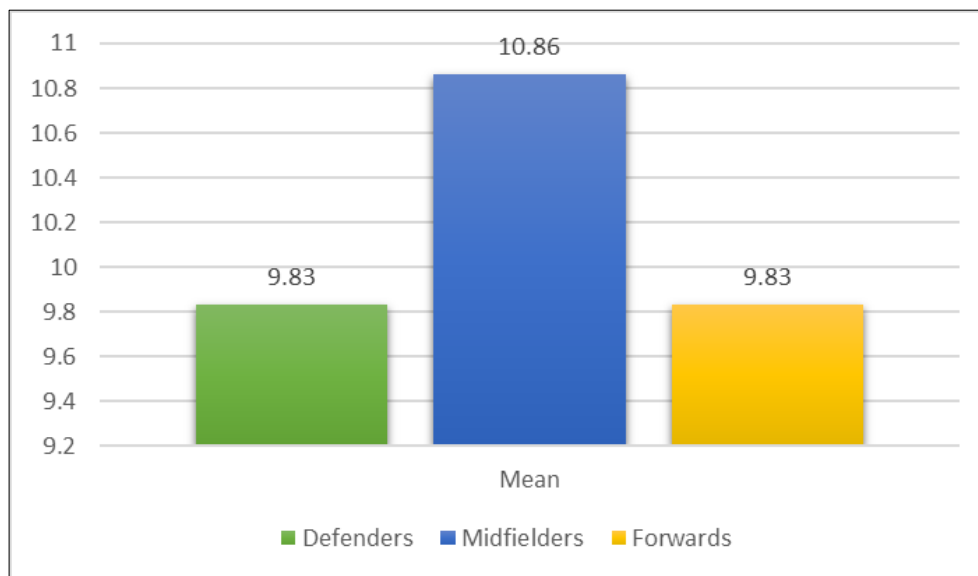


Fig 2: Coachability among soccer players

Table 6: Combined Descriptive and ANOVA Concentration among soccer players

Position	N	Mean	SD	Source	df	Sum Sq	Mean Sq	F value	p-value
Defender	25	10.62	0.13	Between Groups	2	21.01	10.51	115.50	<0.001*
Midfielder	25	9.77	0.11	Within Groups	72	6.55	0.09		
Forward	25	9.82	0.08	Total	74	27.56			

Table 6 presents the descriptive and ANOVA results for *Concentration* among soccer players by position. Defenders showed the highest mean score ($M = 10.62$, $SD = 0.13$), followed by forwards ($M = 9.82$) and midfielders ($M =$

9.77). The ANOVA results revealed a significant difference in concentration levels across positions ($F = 115.50$, $p < 0.001$), indicating that defenders possess significantly higher concentration compared to midfielders and forwards.

Table 7: Post-Hoc Analysis Concentration among soccer players

Forward	Midfielder	Defender	Mean Diff	p-value
9.82	9.77	–	0.05	0.077
9.82	–	10.62	-0.80	<0.001*
–	9.77	10.62	-0.85	<0.001*

Table 7 the ANOVA revealed significant differences in Concentration ($F(2,72)=115.50$, $p<0.001$). Post-hoc analysis showed defenders ($M=10.62$, $SD=0.13$) scored significantly

higher than both midfielders ($M=9.77$, $SD=0.11$) and forwards ($M=9.82$, $SD=0.08$), while no significant difference was found between forwards and midfielders.

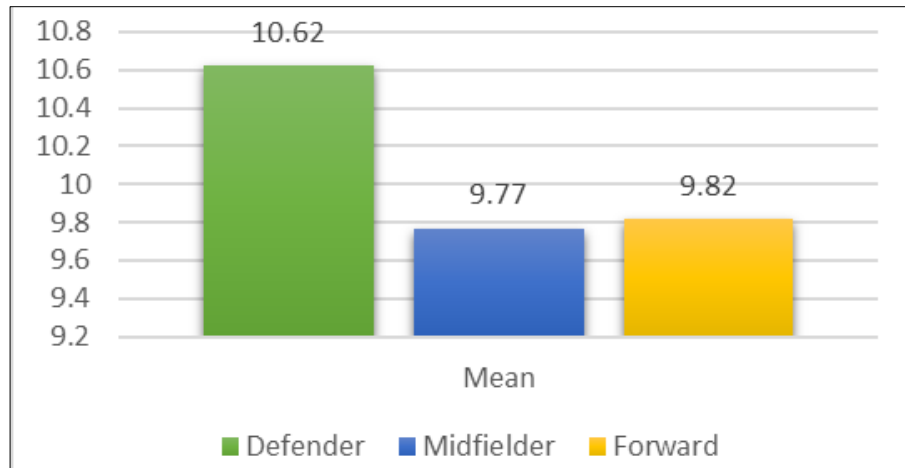


Fig 3: Mean scores for defenders (10.62), midfielders (9.77), and forwards (9.82) showing defenders with the highest average value.

Table 8 Combined Descriptive and ANOVA of Confidence & Achievement Motivation

Position	N	Mean	SD	Source	df	Sum Sq	Mean Sq	F value	p-value
Defender	25	9.78	0.11	Between Groups	2	18.51	9.26	103.93	<0.001*
Midfielder	25	9.82	0.09	Within Groups	72	6.41	0.09		
Forward	25	10.99	0.11	Total	74	24.92			

Table 8 presents the descriptive and ANOVA results for *Confidence and Achievement Motivation* among soccer players by position. Forwards recorded the highest mean score ($M = 10.99$, $SD = 0.11$), followed by midfielders ($M = 9.82$) and defenders ($M = 9.78$). The ANOVA results

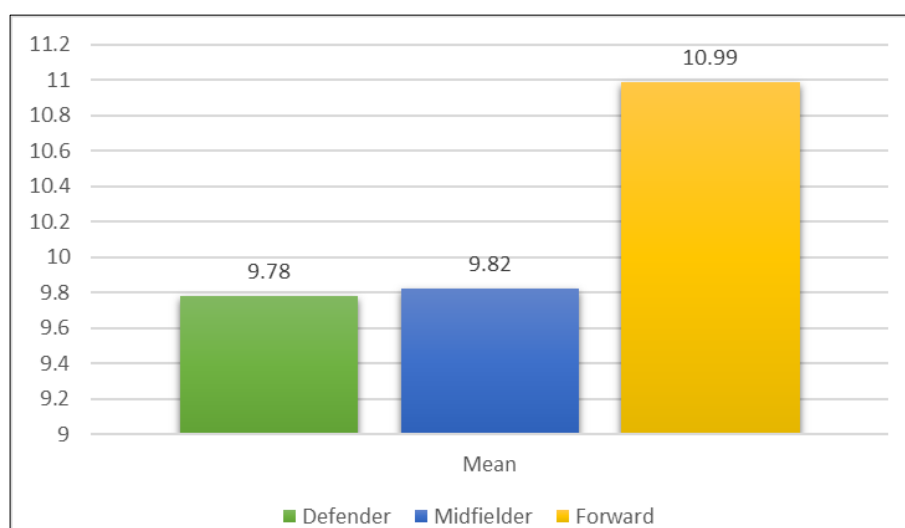
showed a significant difference among positions ($F = 103.93$, $p < 0.001$), indicating that forwards possess significantly higher confidence and achievement motivation compared to defenders and midfielders.

Table 9: Post-Hoc Analysis of Confidence & Achievement Motivation

Forward	Midfielder	Defender	Mean Diff	p-value
10.99	9.82	—	1.17	<0.001*
10.99	—	9.78	1.21	<0.001*
—	9.82	9.78	0.04	0.804

Table 9 the ANOVA revealed significant differences in Confidence & Achievement Motivation ($F(2,72)=103.93$, $p<0.001$). Post-hoc analysis showed forwards ($M=10.99$, $SD=0.11$) scored significantly higher than both midfielders

($M=9.82$, $SD=0.09$) and defenders ($M=9.78$, $SD=0.11$), while no significant difference was found between midfielders and defenders.



Discussion of Findings

The analysis reveals a clear specialization of psychological attributes corresponding to specific soccer positions. Defenders demonstrated a pronounced advantage in Coping with Adversity and Concentration, scoring significantly

higher than players in other roles. This profile is well-suited to the demands of their position, which requires unwavering focus to maintain defensive structure and the mental resilience to handle high-pressure situations where errors can be immediately consequential.

Conversely, the psychological profiles of midfielders and forwards highlighted different core strengths. Midfielders were distinguished by significantly higher Coachability, indicating a greater receptiveness to tactical instruction. This aligns with their role as the team's link between defense and attack, requiring adaptability and a deep understanding of dynamic game plans. Forwards, however, possessed the highest levels of Confidence and Achievement Motivation. This mental toolkit is essential for a position defined by converting limited opportunities, demanding a strong goal-scoring mentality and the self-belief to persist despite missed chances.

The results strongly indicate that the functional demands of each playing role are reflected in the players' developed psychological characteristics. The findings suggest a non-uniform distribution of mental skills across the team, with defenders specializing in resilience and focus, midfielders in adaptability and tactical execution, and forwards in self-assurance and drive. This underscores the potential value of implementing position-specific mental skills training to further enhance the innate psychological strengths required for each role on the field.

Conclusions

The study provides strong evidence that psychological attributes in soccer are not generic. Instead, they are highly specialized and correspond directly to the tactical and functional responsibilities of a player's position.

Defenders consistently displayed the highest scores in Coping with Adversity and Concentration. This points to a psychological profile built around handling pressure and maintaining error-free performance. Their role requires them to absorb offensive attacks and manage critical situations where a single mistake can lead to a goal, necessitating immense mental resilience and sustained focus.

The significantly higher coachability of midfielders indicates a psychological strength in receiving, interpreting, and executing tactical instructions. This aligns perfectly with their role as the team's "engine," requiring them to be flexible, connect play between defense and attack, and constantly adapt to the fluid dynamics of the game, making them the primary tactical executors on the field.

Forwards were distinguished by their superior Confidence and Achievement Motivation. This psychological trait is fundamental for a role defined by success in a low-percentage activity scoring goals. It requires a mindset that can tolerate frequent failure while maintaining the self-belief and relentless drive to capitalize on the next opportunity, essentially thriving on a results-oriented mentality.

The clear divergence in mental profiles underscores the limitation of a uniform psychological training program. The findings strongly advocate for a position-specific approach to mental skills coaching. Training should be designed to reinforce the innate strengths of each role and to address the unique psychological challenges each position faces, thereby maximizing both individual and team performance.

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