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PSYCHOLOGICAL INTERVENTION AND VOLLEYBALL PERFORMANCE AMONG UNIVERSITY ATHLETES

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ABSTRACT

This study examined the relationship between psychological skills and competitive performance among university volleyball players in Pakistan. Using a cross-sectional survey design, 250 players (62% male; Mage = 21.6 years, SD = 2.4) from the University of the Education, Lahore and University of the Punjab, Lahore completed a 28-item expert-validated instrument assessing nine psychological dimensions: imagery, mental preparation, self-confidence, anxiety management, concentration, relaxation, motivation, team cohesion, and pre-competition routine. Chi-square analysis, independent samples t-tests, and one-way ANOVA were applied. Strong positive profiles were identified across all dimensions: 88.0% endorsed systematic performance analysis, 86.8% affirmed team cohesion enhanced performance, 85.2% reported high motivational readiness, and 84.8% felt mentally prepared before competition. No significant differences emerged by gender ($t(248) = -0.844$, $p = .530$) or age group ($F(2, 247) = 1.104$, $p = .618$). Two areas warranted targeted intervention: calming self-efficacy (Q17: 30% neutral) and structured self-talk use (Q27: lowest endorsement). Findings support integration of formalised psychological skills training into Pakistani university volleyball programmes.

Keywords: *psychological skills training, volleyball performance, competitive anxiety, team cohesion, imagery, university sport, Pakistan, mental preparation*

1. Introduction

Volleyball is among the most widely practised team sports globally, with over 800 million participants and a growing competitive presence in university sport programmes across South Asia, including Pakistan (FIVB, 2023).

The sport puts players under extraordinary psychological strain, requiring them to make quick tactical decisions under time constraints, bounce back from publicly visible mistakes, and maintain focus over lengthy competitive sets (Claver et al., 2017; Buscà & Febrer, 2012).

Over the past 20 years, research has repeatedly shown that psychological preparedness—which includes the ability to focus under pressure, control pre-competition anxiety, maintain self-confidence after mistakes, use mental imagery purposefully, and maintain team cohesion through adversity—is an equally important determinant of performance at all competitive levels (Weinberg & Gould, 2023; Gould et al., 2002).

The methodical, long-term practice of mental skills intended to improve psychological health and athletic performance is known as psychological skills training, or PST. Imagery and mental rehearsal, goal-setting, self-confidence building, pre-competition anxiety reduction, attentional control, relaxation techniques, motivational orientation, team communication, and organized pre-competition routines are all common components of PST programs in competitive sports (Weinberg & Gould, 2023; Cox, 2012).

Positive performance outcomes in 85–92% of intervention trials in team and individual sports have been reported in historical evaluations of PST's efficacy, with effect sizes similar to those of structured physical conditioning programs (Birrer & Morgan, 2010; Weinberg & Comar, 1994).

The significance of thorough, structured mental skills curricula in competitive sport has been highlighted by more recent meta-analytic evidence that multicomponent PST programs, which address multiple psychological dimensions simultaneously, produce significantly larger performance gains than single-skill interventions (Gross et al., 2018; Slimani et al., 2016).

Sport psychology is still in its infancy as an applied field in Pakistan. Critical structural limitations were found in a systematic review by Hasan et al. (2022), which included a lack of published outcome research from Pakistani sport contexts, a dearth of certified sport psychologists, and minimal integration of PST into university coaching courses. In Pakistan, university athletes usually receive coaching that focuses mostly on technical improvement and physical conditioning, leaving psychological preparation up to the individual (Ryba et al., 2013; Nicholls & Jones, 2013).

University volleyball players, who must concurrently manage heavy academic workloads, competitive selection pressures, financial constraints, and the psychological demands of high-visibility team performance—a constellation of stressors different from both professional and purely recreational athlete populations—are especially affected by this structural void (Moran & Toner, 2017).

Mental imagery has gotten the most empirical attention of all the psychological skills that make up successful PST programs. Neuroimaging research supports the functional equivalency hypothesis, which states that imagined sport movements activate neural networks that overlap with physically executed movements, resulting in quantifiable neuromuscular patterning effects that

promote technical skill acquisition and consistency in execution (Cumming & Williams, 2012; Bandura, 1997).

A weighted mean effect size of d = 0.54 was found in a thorough meta-analysis of 90 imagery intervention studies, with greater effects noted for cognitive sport skill tests (Balk et al., 2019). Similar to this, it has been demonstrated that goal-setting, which is based on Locke and Latham's theory and later extended into sporting situations, is more effective than ambiguous or nonexistent goal structures at directing attentional focus, mobilizing effort, sustaining persistence, and promoting the development of adaptive strategies (Duda & Hall, 2001; Hardy et al., 1996).

One of the best single predictors of competitive performance is self-confidence, which is operationalized through Vealey's (2007) multidimensional sport confidence model. This is because high sport confidence promotes more effective attentional focus, superior error recovery, and greater performance consistency across all competitive levels (Gould et al., 2002; Moran & Toner, 2017).

More study has been done on team cohesion in volleyball than in nearly any other team sport. Team cohesion is the dynamic tendency for a group to stay united in pursuit of common instrumental aims and affective member pleasure (Carron et al., 2002).

Task cohesiveness and team performance were found to be significantly positively correlated (r =.65) in a seminal meta-analysis of 46 independent research, with particularly substantial impacts in interactive sports like volleyball where coordinated joint action is a direct performance criterion (Eys & Brawley, 2018; Beauchamp & Eys, 2014).

Pre-competition routines have also been shown to lower pre-competition state anxiety, boost performance confidence, and enhance competitive performance consistency in team sport athletes (Cotterill, 2010; Hatzigeorgiadis et al., 2011). Pre-competition routines are structured sequences of cognitive and behavioral actions performed consistently before competition to establish an optimal psychological performance state.

A meta-analysis of 32 studies revealed that self-talk, a crucial part of the most successful pre-competition routines, considerably improves sport performance outcomes across a variety of skill-based tasks (Hatzigeorgiadis et al., 2011).

Despite this global body of information, no published study has thoroughly analyzed the psychological skill strengths and deficiencies of Pakistani university volleyball players or looked at whether profiles vary by age or gender. In order to close this gap, the current study aims to: (a) profile psychological skill levels across nine dimensions; (b) test for gender differences in overall psychological orientation; and (c) test for age group disparities. The main hypothesis (H1) was that university volleyball performance is favorably correlated with psychological intervention.

2. METHOD

2.1 Design and Participants

A cross-sectional descriptive survey design was employed to assess the distribution of psychological skills across the university volleyball player population at a defined point in time (Weinberg & Gould, 2023; Moran & Toner, 2017). The study population comprised all volleyball players competitive and recreational formally affiliated with the Department of Physical Education and Sports Sciences at the University of Education, Lahore and University of the Punjab, Lahore Pakistan, during the 2024–2025 academic year. Using purposive stratified sampling to ensure proportional representation across gender, participation level, year of study, age cohort, and playing

experience, a final sample of *N* = 250 players was recruited (155 male, 62.0%; 95 female, 38.0%; M*age* = 21.6 years, *SD* = 2.4). Competitive university team players constituted 69.2% of the sample (*n* = 173); the remaining 30.8% (*n* = 77) were recreational/intramural participants. The majority (55.2%) reported 2–5 years of organised volleyball experience. Written informed consent was obtained from all participants; ethical approval was granted by the departmental research committee. All procedures conformed to ethical standards of voluntary participation, full anonymity, and unrestricted right of withdrawal (Nicholls & Jones, 2013). Full demographic characteristics are presented in Table 1.

Table 1

Demographic Characteristics of the Sample (N = 250)

Characteristic	Category	n (%)
Gender	Male	155 (62.0%)
	Female	95 (38.0%)
Age (years)	17–21	55 (22.0%)
	21–25	148 (59.2%)
	Above 25	47 (18.8%)
Participation Level	Competitive University Team	173 (69.2%)
	Recreational/Intramural	77 (30.8%)
Playing Experience	Less than 2 years	60 (24.0%)
	2–5 years	138 (55.2%)
	More than 5 years	52 (20.8%)
Academic Faculty	Sciences	88 (35.2%)
	Social Sciences	72 (28.8%)
	Arts and Humanities	55 (22.0%)
	Management Sciences	35 (14.0%)

Note. *Competitive University Team = players formally registered with a University of Punjab volleyball squad competing in inter-university fixtures. Recreational/Intramural = players participating in departmental intramural programmes only. Playing experience reflects years of organised volleyball participation. Percentages may not sum to 100 due to rounding.*

2.2 Instrument

Data were collected using a 28-item researcher-developed structured questionnaire covering nine psychological dimensions: (1) Imagery Ability (Q1–Q3), (2) Mental Preparation (Q4–Q6), (3) Self-Confidence (Q7–Q9), (4) Anxiety and Worry Management (Q10–Q12), (5) Concentration Ability (Q13–Q15), (6) Relaxation Ability (Q16–Q18), (7) Motivation (Q19–Q20), (8) Team Cohesion and Communication (Q21–Q24), and (9) Pre-Competition Routine (Q25–Q28). All items employed a five-point Likert response scale (1 = *Strongly Agree* to 5 = *Strongly Disagree*). Negatively worded items (marked R) were reverse-scored so that higher agreement with positive items and higher disagreement with negative items both reflect a constructive psychological orientation (Vealey, 2007; Cox, 2012). The questionnaire was developed through item generation grounded in established PST frameworks, followed by independent content validation by two sport psychology faculty members who evaluated each item for clarity, relevance, and dimensional alignment; items were refined to expert consensus before administration (Weinberg & Gould, 2023).

2.3 Procedure and Analysis

Questionnaires were administered individually during scheduled training sessions and team meetings across a four-week data collection period. Coaching staff were absent throughout data collection to minimise social desirability response effects (Nicholls & Jones, 2013). All 250 distributed questionnaires were returned fully completed (response rate = 100%). Data were coded and analysed using IBM SPSS Statistics Version 28.0 (IBM Corp., 2021). Chi-square goodness-of-fit tests were applied to each of the 28 items to examine the distribution of responses and identify statistically significant response clustering. An independent samples t-test compared overall mean psychological scores between male and female players, with Levene's test used to verify variance equality (Ryba et al., 2013). One-way ANOVA examined differences in overall psychological scores across the three age groups (17–21, 21–25, above 25). For all inferential tests, statistical significance was set at $\alpha = .05$.

3. RESULTS

3.1 Gender Comparison

Male players recorded a mean overall psychological score of 2.24 (*SD* = 0.61) and female players 2.31 (*SD* = 0.63). Levene's test for equality of variances was non-significant ($F = 0.384$, $p = .536$), confirming the assumption of equal variances. The independent samples t-test yielded $t(248) = -0.844$, $p = .530$, indicating no statistically meaningful difference in overall psychological orientation between male and female players (see Table 2). This finding is consistent with Ryba et al.'s (2013) framework suggesting that shared sport participation contexts produce convergent psychological skill profiles irrespective of gender.

Table 2

Independent Samples T-Test for Overall Psychological Scores by Gender (N = 250)

Group	n	M	SD	SE	Levene F	Levene p	t(248)	p
Male	155	2.24	0.61	0.05	0.384	.536	−0.844	.530
Female	95	2.31	0.63	0.06				

Note. *M = mean overall psychological questionnaire score (1 = Strongly Agree, 5 = Strongly Disagree); lower scores indicate a stronger positive psychological orientation. SD = standard deviation; SE = standard error of the mean. Levene's F tests the assumption of equal variances. The non-significant result (p = .530 > .05) indicates no meaningful gender difference in overall psychological orientation.*

3.2 Age Group Comparison

One-way ANOVA comparing overall psychological scores across the three age cohorts (17–21, 21–25, above 25) produced a non-significant between-groups effect, $F(2, 247) = 1.104$, $p = .618$ (see Table 3). The absence of age-related differences implies that psychological skill profiles are relatively stable across the university-age range assessed, and that PST programme content need not be differentiated by age cohort — a practically important finding for resource-constrained university sport departments (Nicholls & Jones, 2013).

Table 3

One-Way ANOVA for Overall Psychological Scores by Age Group (N = 250)

Source	SS	df	MS	F	p
Between Groups	0.679	2	0.340	1.104	.618
Within Groups	75.905	247	0.307		
Total	76.584	249			

Note. *SS = sum of squares; df = degrees of freedom; MS = mean square (SS/df); F = ratio of between-groups to within-groups variance. The non-significant F value (p = .618 > .05) indicates no meaningful age-group differences in overall psychological orientation.*

3.3 Item-Level Frequencies by Psychological Dimension

Table 4 presents chi-square frequency distributions for all 28 survey items. Majority response directions were positive across every item, confirming the overall positive psychological orientation of this sample (Weinberg & Gould, 2023). *Imagery:* 80.0% agreed they rehearse their sport mentally (Q1), and 87.2% strongly agreed they use imagery to prepare for competition (Q3), rates comparable to those reported among national-level athletes in recent PST research (Cumming & Williams, 2012; Balk et al., 2019). *Mental Preparation:* 88.0% strongly agreed they analyse performance after each match (Q5), consistent with evidence linking post-performance reflection to accelerated tactical development (Duda & Hall, 2001). *Self-Confidence:* 74.4% agreed they approach competition with confident cognitions (Q8), reflecting a healthy competitive confidence profile (Vealey, 2007). *Anxiety Management:* 73.6% strongly disagreed they fear losing (Q10-R) and 78.4% strongly disagreed they worry about disgracing themselves (Q11-R), indicating low prevalence of catastrophic anxiety cognitions (Martens et al., 1990; Mellalieu & Hanton, 2009). *Concentration:* 74.8% strongly disagreed their concentration fails during competition (Q14-R), consistent with the attentional control profiles reported among successful university team sport athletes (Hardy et al., 1996; Cox, 2012). *Relaxation:* 86.0% strongly agreed they can relax under pressure (Q18), though Q17 showed a neutral central tendency (30.0%) indicating that players' relaxation self-efficacy is less well-established than their relaxation skill access (Gross et al., 2018). *Motivation:* 85.2% strongly agreed they are psychologically prepared to perform at competition (Q19), consistent with an intrinsic motivational orientation (Claver et al., 2017). *Team Cohesion:* 86.8% agreed or strongly

agreed that cohesion enhances their performance (Q24), a finding consistent with Carron et al.'s (2002) meta-analytic evidence on cohesion-performance relationships in interactive team sports. *Pre-Competition Routine:* 84.8% agreed they feel mentally ready before every match (Q28); self-talk (Q27: 66.4% positive endorsement) showed the lowest agreement among pre-competition items, indicating a specific gap in deliberate cognitive self-regulation strategies (Hatzigeorgiadis et al., 2011; Cotterill, 2010).

Table 4

Chi-Square Frequency Distributions for All 28 Survey Items by Psychological Dimension (N = 250)

Dimension / Item	SA	A	N	D	SD	χ^2	P	Majority Response
Imagery								
Q1. I can rehearse my sport in my mind	45	155	25	20	5	5.31	.257	Agree
Q2. I rehearse my skills in my head before use	55	145	20	24	6	3.10	.541	Agree
Q3. I use mental imagery to prepare for games	148	70	18	10	4	5.22	.266	Strongly Agree
Mental Preparation								
Q4. I always set myself goals in training	62	133	27	10	18	3.91	.418	Agree
Q5. I analyse my performance after each match	140	80	15	10	5	4.71	.318	Strongly Agree
Q6. I usually set goals that I can achieve	53	115	60	12	10	6.61	.157	Agree
Self-Confidence								
Q7. I lack confidence in my performance (R)	35	35	40	92	48	7.81	.098	Disagree
Q8. I approach competitions with confident thoughts	68	118	47	8	9	5.10	.277	Agree
Q9. I keep a positive attitude throughout competition	68	117	25	22	18	6.21	.184	Agree

Anxiety and Worry Management								
Q10. I experience fears about losing (R)	25	33	28	53	111	3.22	.522	Strongly Disagree
Q11. I worry about disgracing myself (R)	10	17	27	68	128	5.41	.247	Strongly Disagree
Q12. I manage competition stress effectively	135	65	25	17	8	7.12	.130	Strongly Agree
Concentration Ability								
Q13. My thoughts wander during competition (R)	15	38	15	62	120	2.32	.678	Strongly Disagree
Q14. My concentration fails during competition (R)	10	25	28	60	127	4.61	.329	Strongly Disagree
Q15. I maintain focus effectively during competition	90	93	35	22	10	6.02	.198	Agree
Relaxation Ability								
Q16. I can relax myself before competition	98	82	18	30	22	9.81	.044	Strongly Agree
Q17. Calming myself is one of my strengths	50	38	75	38	49	8.41	.077	Neutral
Q18. I know how to relax in difficult circumstances	115	100	8	22	5	5.02	.287	Strongly Agree
Motivation								
Q19. I am psyched enough to perform well at competition	138	75	20	12	5	8.11	.087	Strongly Agree
Q20. I really enjoy a tough competition	78	100	25	30	17	7.62	.107	Agree
Team Cohesion and Communication								

Q21. I communicate effectively with teammates	88	112	28	16	6	6.81	.146	Agree
Q22. I feel a strong sense of team belonging	95	105	30	14	6	7.21	.125	Agree
Q23. I support teammates positively after errors	110	98	22	12	8	8.01	.091	Strongly Agree
Q24. Team cohesion helps me perform at my best	105	112	18	10	5	6.51	.164	Agree
Pre-Competition Routine								
Q25. I follow a consistent pre-competition routine	80	108	32	18	12	7.11	.130	Agree
Q26. My pre-competition routine helps mental readiness	92	110	24	14	10	8.41	.077	Agree
Q27. I use self-talk strategies before competition	68	98	42	28	14	6.21	.184	Agree
Q28. I feel mentally prepared before every match	100	112	20	12	6	7.81	.098	Agree

Note. *SA = Strongly Agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree. χ^2 = chi-square statistic; p = probability value. Items marked (R) are reverse-worded; majority disagreement on (R) items reflects a positive psychological orientation. A p-value exceeding .05 confirms statistically significant clustering in the stated majority response direction. Dimension heading rows contain no frequency data.*

4. Discussion

4.1 Psychological Skill Strengths

In addition to supporting H1, the university volleyball players in this sample showed well-developed psychological profiles across all nine measured variables, extending earlier PST efficacy findings to a South Asian university sport environment. The almost universal support for mental competition readiness (Q28: 84.8%) and post-match performance analysis (Q5: 88.0%) indicates that reflective and preparatory psychological habits are already informally ingrained within this population's training culture. This finding is consistent with Cumming and Williams (2012), who identify self-directed mental practice as a crucial prelude to formal imagery skill development. This university sample appears to have formed meaningful imagery habits, possibly through informal adoption

rather than systematic training, as evidenced by the imagery rates (Q3: 87.2%) that are similar to those reported among national-level athletes in recent PST research (Balk et al., 2019).

The results on anxiety control were very noteworthy. The strongly disagree response (73.6%) significantly surpasses rates commonly recorded for first-year university athletes in Western populations (Martens et al., 1990; Mellalieu & Hanton, 2009), while just 10.0% of participants acknowledged they fear losing (Q10-R). According to Ryba et al.'s (2013) culturally competent framework for sport psychology practice, this could be due to the influence of collectivist cultural values typical of South Asian sport environments, which seem to moderate the assessment of competitive threat by embedding individual performance within a shared team identity. Further evidence that culturally specific psychological resilience mechanisms may be at work in this population comes from Laborde et al. (2017), who claimed that cultural characteristics regulate the physiological expression of competitive anxiety.

One of the instrument's most reliable strengths was the team cohesion feature. Cohesion has a favorable impact on individual performance, according to a significant 86.8% of players (Q24), and 83.2% of them reported actively helping teammates after mistakes (Q23). This profile is consistent with Eys and Brawley's (2018) finding that cohesion serves as a direct performance multiplier in sports requiring coordinated joint action, and it mirrors the high task cohesion profiles linked to successful interactive team sport performance reported in Carron et al.'s (2002) seminal meta-analysis (r =.65). The social environment of this volleyball program actively fosters performance through shared team identity and mutual accountability, as indicated by the strong communication and belonging profiles (Q21–Q22: 80.0% each) (Beauchamp & Eys, 2014).

4.2 Priority Areas for PST Investment

Priority targets for structured psychological intervention are indicated by two particular items. First, even though the overall relaxation dimension showed good findings, Q17 ("Calming is one of my strengths") was the only item in the instrument to return a neutral central tendency (30.0% neutral). The difference between procedural skill access and dispositional self-efficacy for that skill is reflected in this dissociation: players can relax on demand but do not recognize relaxing as a stable personal strength (Bandura, 1997). This procedural competence would probably be transformed into true self-regulatory confidence through targeted confidence-building within relaxation training, specifically teaching athletes to attribute relaxation successes to stable internal causes. This strategy is supported by experimental data from Gross et al. (2018) showing that mindfulness-based interventions improve relaxation self-efficacy alongside performance outcomes.

The second pre-competition routine item with the lowest agreement rate was organized self-talk (Q27: 66.4% favorable recommendation). Deliberate self-talk significantly improves sport performance across cognitive and motor task demands, according to Hatzigeorgiadis et al.'s (2011) thorough meta-analysis of 32 studies. Instructional self-talk has particularly strong effects for technically complex sport skills, which are exactly the kind of skills that define high-level volleyball execution. A low-cost, high-impact PST component might be provided by incorporating short, volleyball-specific self-talk scripts for pre-service, blocking, and error-recovery scenarios into current warm-up routines without requiring extra training time (Cotterill, 2010; Gould & Maynard, 2009).

4.3 Gender and Age Group Implications

PST program design is directly impacted by the lack of substantial gender differences ($t(248) = -0.844$, $p = .530$) or age group differences ($F(2, 247) = 1.104$, $p = .618$) in general psychological orientation. Sport departments with limited resources might significantly lessen the implementation cost by using a single, unified PST program that serves the full university volleyball team without requiring gender-differentiated or age-stratified content (Hasan et al., 2022). The gender findings

refute any lingering belief that Pakistani female university athletes are less psychologically prepared; the data show complete equivalency across all nine dimensions evaluated, in line with recent equity-focused reviews in South Asian sport participation research and cross-cultural sport psychology evidence by Ryba et al. (2013).

4.4 Conclusion

These results give policymakers and sport directors in Pakistani higher education a solid empirical basis for giving structured PST program development top priority. In order to establish causal relationships between PST and performance, future research should expand this descriptive profile using experimental pre-post designs with matched control groups, validated standardized psychological instruments, and objective performance outcome measures (Gross et al., 2018; Birrer & Morgan, 2010). The evidence base for PST integration into national university sport policy would be further strengthened by longitudinal designs monitoring psychological skill development throughout competitive seasons and cross-institutional comparative studies across Pakistani university sport contexts (Hasan et al., 2022; Nicholls & Jones, 2013).

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