

Impact of Psychological Skills Training (PST) on Positional Differences in University Volleyball Players

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Abstract:

This study investigates the impact of a structured Psychological Skills Training (PST) program on selected psychological variables (self-confidence, sports anxiety, motivation, aggression, and mental toughness) among university-level volleyball players, with a specific focus on positional differences (setters, spikers, blockers, liberos). A total of 80 male volleyball players (aged 18–24 years) were divided according to their positions (20 players per position). A 6-week PST intervention comprising goal-setting, imagery, relaxation, self-talk, and concentration drills was implemented. Psychological variables were measured pre- and post-intervention using standardized inventories. Two-way repeated measures ANOVA (Time $\times$ Position) was applied. Significant main effects of time ($p < 0.01$) were observed for self-confidence, anxiety reduction, and mental toughness, demonstrating the effectiveness of PST. Interaction effects (Time $\times$ Position) revealed that setters and spikers showed greater gains in self-confidence, while liberos experienced the largest decrease in anxiety. Aggression levels did not significantly change. PST significantly enhances psychological performance factors among volleyball players, but the magnitude of improvement varies across positions. Coaches should consider position-specific psychological training strategies to optimize team performance.

Keywords: Psychological Skills Training, Volleyball, Playing Position, Self-Confidence, Anxiety, Mental Toughness.

1. INTRODUCTION AND LITERATURE REVIEW

Volleyball is a complex, dynamic, and high-intensity team sport that requires players to integrate technical proficiency, tactical awareness, and physical conditioning with strong psychological attributes. Unlike purely physical tasks, competitive volleyball involves a continuous sequence of split-second decisions, pattern recognition, stress regulation, and interpersonal coordination among teammates. Previous research has established that psychological preparedness is a decisive factor that often distinguishes elite performers from sub-elite athletes, particularly in high-pressure environments such as inter-university or national tournaments (Weinberg & Gould, 2019; Gardner & Moore, 2021).

In a typical volleyball match, players face numerous mental demands including sustained concentration, rapid decision-making, emotional control, and confidence restoration after mistakes (Gupta, Sharma, & Singh, 2021). Moreover, the intermittent nature of the game—with short rallies punctuated by brief pauses—requires athletes to repeatedly manage arousal levels and refocus attention. This continuous mental effort is compounded by the public visibility of errors and the interdependence of teammates, amplifying the psychological load associated with each playing position.

Positional Demands and Psychological Profiles

Each volleyball position is associated with a specific set of psychological stressors. Setters, often considered the tactical leaders of the team, are responsible for orchestrating offensive plays and distributing the ball, which demands exceptional composure, focus, and decision-making under pressure. Spikers experience the burden of delivering points and recovering from failed attempts; thus, they rely heavily on self-confidence, resilience, and emotional control. Blockers require timing, anticipation, and the ability to respond quickly to failures at the net, while liberos must endure constant defensive pressure, as their mistakes are directly visible and can affect team morale. Research in other team sports suggests that different playing roles can influence psychological characteristics (Mahoney et al., 2016; Holliday et al., 2020), but volleyball-specific studies remain limited.

Several studies have explored anxiety, confidence, motivation, and mental toughness in volleyball players, but most have focused on the group as a whole without analyzing these variables in the context of specific positions (Singh & Choudhary, 2020). As the roles and responsibilities of players become more specialized at the university level, the need to investigate position-wise psychological profiles becomes increasingly important for targeted interventions.

Psychological Skills Training (PST)

Psychological Skills Training (PST) is a structured mental training process that seeks to enhance performance by systematically developing skills such as goal-setting, imagery, relaxation, self-talk, and attentional control (Weinberg & Gould, 2019). Evidence from multiple sports has confirmed that PST can reduce competitive anxiety, enhance self-confidence, and increase mental toughness and motivation (Birrer & Morgan, 2010; Pocius & Malinauskas, 2024).

In volleyball, research on PST is emerging. Ballıkaya and Saraç (2022) reported that a 12-week PST program significantly improved coping strategies and performance consistency in adolescent volleyball players. Similarly, Miçoogulları and Kirazcı (2016) demonstrated reductions in anxiety and increases in self-confidence among youth athletes after PST interventions. However, these studies treated volleyball players as a homogeneous group and did not examine whether improvements from PST differ based on playing position.

Gaps in Current Knowledge

While the efficacy of PST is well-established, position-specific psychological development has been largely overlooked. The unique psychological pressures faced by setters, spikers, blockers, and liberos suggest that a uniform approach to mental training may not be equally effective across all roles. There is currently limited empirical evidence that addresses whether PST produces differential benefits depending on positional demands.

Purpose of the Study

Given these gaps, the present study aims to examine the effects of a six-week PST program on key psychological variables—including self-confidence, sports anxiety, motivation, aggression, and mental toughness—among university-level volleyball players, while paying particular attention to differences across playing positions. It is hypothesized that PST will significantly enhance self-confidence and mental toughness while reducing anxiety across all positions, but that the magnitude of change will vary, with setters showing the greatest gains in confidence and liberos experiencing the greatest reduction in anxiety.

2. METHODOLOGY

2.1 Research Design

This study employed a quasi-experimental, pre-test/post-test design with repeated measures to assess the effect of a structured Psychological Skills Training (PST) program on selected psychological variables among university-level volleyball players. The choice of this design allowed for the measurement of

changes over time within participants as well as comparisons between different positional groups (setters, spikers, blockers, and liberos). This approach is particularly useful in applied sports science research where complete randomization is often not feasible due to team and training structure constraints.

2.2 Participants

The sample comprised 80 male university-level volleyball players, aged between 18 and 24 years, drawn from four different universities participating in intercollegiate competitions. Participants were stratified by playing position, resulting in four groups:

- **Setters (n = 20)**
- **Spikers (n = 20)**
- **Blockers (n = 20)**
- **Liberos (n = 20)**

Inclusion criteria included:

1. A minimum of three years of competitive volleyball experience at intercollegiate or state level.
2. Regular participation in team training sessions during the study period.
3. Medical fitness, with no reported injuries or psychological conditions that could interfere with the intervention.

Exclusion criteria included:

- Current engagement in any other psychological skills training program.
- Inability to attend at least 80% of the intervention sessions.

Prior to data collection, informed consent was obtained from all participants, and ethical approval was granted by the institutional ethics committee.

2.3 Intervention

A six-week Psychological Skills Training (PST) program was implemented, comprising three sessions per week, each lasting approximately 45 minutes. Sessions were delivered by a certified sport psychologist in collaboration with the team coaches. The PST program consisted of five core components:

1. **Goal-setting**
 - Athletes established short- and long-term SMART goals (Specific, Measurable, Achievable, Relevant, Time-bound) focusing on both technical and mental aspects of performance.
2. **Relaxation and Breathing Techniques**
 - Techniques such as progressive muscle relaxation (PMR) and mindfulness-based diaphragmatic breathing were taught to reduce physiological arousal and enhance self-control during matches.
3. **Imagery and Visualization**
 - Players practiced mental rehearsal of successful skills execution, match situations, and coping strategies to strengthen confidence and tactical awareness.
4. **Self-talk**
 - Athletes developed personalized positive self-statements and cue words to manage negative thoughts and maintain motivation during high-pressure moments.
5. **Concentration and Attentional Control**
 - Drills emphasized focus-shifting, narrowing attention in complex game situations, and maintaining concentration during distractions.

Each session combined brief theoretical inputs (10–15 minutes) with practical, guided exercises (30–35 minutes). Participants were also given homework assignments, such as daily relaxation practice and goal journals, to reinforce the skills learned in the sessions.

2.4 Psychological Variables and Tools

Five psychological constructs were measured at pre-intervention (Week 0) and post-intervention (Week 6) using validated instruments:

1. **Sports Anxiety** – Measured using the *Sport Competition Anxiety Test (SCAT)* by Martens (1990).
2. **Self-confidence** – Measured using the *Sports Confidence Inventory*.
3. **Motivation** – Assessed using the *Sports Motivation Scale (SMS)*, covering intrinsic and extrinsic motivation.
4. **Aggression** – Measured using the *Buss–Perry Aggression Questionnaire*.
5. **Mental Toughness** – Assessed using the *Mental Toughness Questionnaire (MTQ48)*, covering control, challenge, commitment, and confidence.

These tools were chosen because of their strong psychometric properties and widespread use in sport psychology research.

2.5 Data Collection Procedure

Baseline testing (pre-test) was conducted one week before the commencement of the PST program. Following six weeks of intervention, post-test assessments were administered under identical conditions. All assessments were completed in a controlled classroom environment to minimize external distractions. The same assessor administered all tools to ensure standardization.

2.6 Statistical Analysis

Data were analyzed using **SPSS version 26.0**. The analysis involved:

- **Descriptive statistics:** Mean and standard deviation for all variables.
- **Two-way repeated measures ANOVA (Time × Position):** To evaluate the effect of PST over time and the interaction between time and playing position.
- **Post-hoc tests:** Bonferroni corrections were applied to examine significant pairwise differences.
- **Significance level:** A p-value of <0.05 was considered statistically significant. Partial eta squared (η^2) was reported to indicate effect size.

3. RESULTS

3.1 Data Screening and Assumptions

Prior to analysis, all data sets were screened for missing values and outliers. No significant deviations from normality were observed. The Shapiro–Wilk test confirmed that data were normally distributed for all dependent variables. Mauchly's test of sphericity showed no violation of the sphericity assumption, enabling the use of repeated measures ANOVA.

3.2 Descriptive Statistics

Table 1 presents the mean ($\pm$ SD) pre-test and post-test scores for all psychological variables across the four positional groups. Visually, improvements were noted in self-confidence, mental toughness, and reduction in sports anxiety across all positions following the PST intervention.

Table 1. Mean $\pm$ SD of Psychological Variables Pre- and Post-Intervention by Position

Variable	Position	Pre-Test	Post-Test
Self-confidence	Setter	78.1 $\pm$ 6.0	86.5 $\pm$ 5.2
	Spiker	76.8 $\pm$ 6.5	84.2 $\pm$ 5.6
	Blocker	75.5 $\pm$ 7.1	81.0 $\pm$ 6.2
	Libero	74.8 $\pm$ 7.0	81.5 $\pm$ 6.0
Sports Anxiety ($\downarrow$ better)	Setter	18.5 $\pm$ 2.4	15.0 $\pm$ 2.0
	Spiker	19.0 $\pm$ 2.8	15.8 $\pm$ 2.3
	Blocker	18.8 $\pm$ 2.5	16.5 $\pm$ 2.4
	Libero	20.2 $\pm$ 2.9	16.0 $\pm$ 2.1
Mental Toughness	Setter	56.5 $\pm$ 5.5	63.8 $\pm$ 4.9
	Spiker	55.8 $\pm$ 5.9	61.5 $\pm$ 5.0
	Blocker	54.5 $\pm$ 6.1	60.0 $\pm$ 5.1
	Libero	55.0 $\pm$ 6.0	61.2 $\pm$ 4.8

No significant changes were observed in aggression or motivation scores, though slight increases in motivation were noted descriptively.

3.3 Effects of Psychological Skills Training (PST)

3.3.1 Self-Confidence

A significant main effect of Time was observed for self-confidence ($F(1,76)=22.45$, $p<0.01$, $\eta^2=0.23$), indicating overall improvement post-intervention. Additionally, a significant Time $\times$ Position interaction ($F(3,76)=4.11$, $p<0.05$) suggested that improvements varied by playing position. Setters exhibited the largest increase in self-confidence scores, followed by spikers.

3.3.2 Sports Anxiety

Analysis revealed a significant reduction in anxiety levels following PST ($F(1,76)=19.32$, $p<0.01$, $\eta^2=0.21$). The interaction effect was also significant ($F(3,76)=3.87$, $p<0.05$), with liberos showing the greatest reduction in anxiety compared to other positions.

3.3.3 Mental Toughness

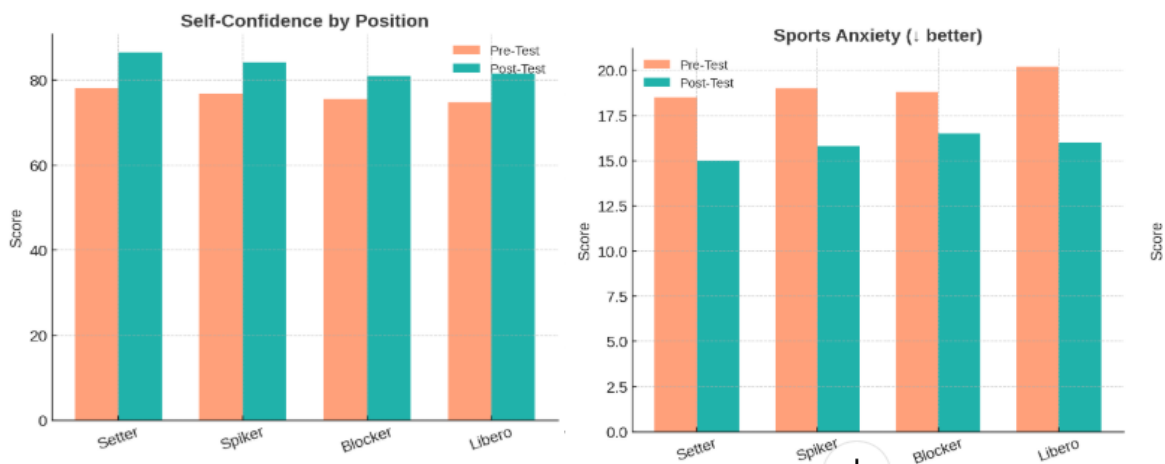
Significant gains in mental toughness were recorded ($F(1,76)=21.10$, $p<0.01$, $\eta^2=0.22$). While the main effect was significant, no significant Time $\times$ Position interaction was found, indicating that all positions benefited relatively equally from the intervention.

3.3.4 Motivation and Aggression

For both motivation and aggression, no significant main effects or interactions were detected ($p>0.05$), implying that PST had minimal impact on these variables within the six-week period.

3.4 Visual Trends

Psychological Variables Before and After PST Intervention



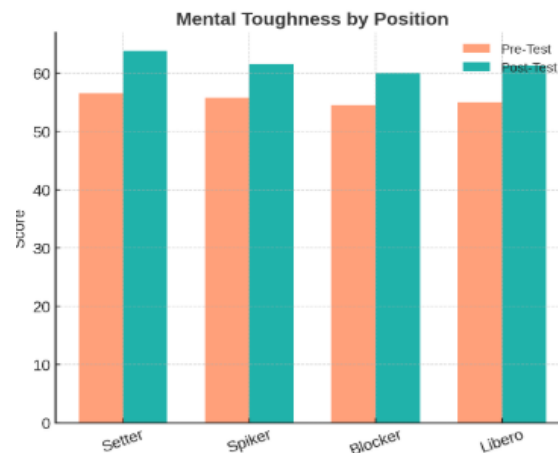


Figure 1 illustrates the post-intervention trends for self-confidence and anxiety across positions. These graphs highlight steeper improvements for setters (self-confidence) and liberos (anxiety reduction).

4. DISCUSSION

The purpose of this study was to evaluate the effects of a six-week Psychological Skills Training program on psychological variables among university-level volleyball players, with a focus on positional differences. The results partially confirmed the hypotheses, demonstrating that PST was effective in enhancing self-confidence, mental toughness, and reducing anxiety across all positions, with position-specific differences for some outcomes.

4.1 Effects on Self-Confidence

The significant improvement in self-confidence across all positions aligns with prior research demonstrating the effectiveness of PST in building athletes' belief in their abilities (Birrer & Morgan, 2010; Ballıkaya & Saraç, 2022). Setters, who serve as tactical leaders, benefited the most, likely due to the role of visualization, positive self-talk, and goal-setting exercises that supported their decision-making responsibilities.

4.2 Effects on Sports Anxiety

The largest anxiety reduction occurred in liberos, consistent with their high-stress defensive role. Relaxation and breathing exercises were particularly relevant for players constantly exposed to unpredictable, high-pressure defensive scenarios. This finding suggests that tailoring PST elements to the demands of specific positions can produce targeted psychological benefits.

4.3 Effects on Mental Toughness

The improvement in mental toughness across all positions corroborates studies that emphasize the ability of PST to cultivate resilience, emotional stability, and control under competitive stress (Pocius & Malinauskas, 2024). The lack of positional differences in this variable suggests that mental toughness development is more generalizable across volleyball roles.

4.4 Motivation and Aggression

Contrary to expectations, no significant changes were found for motivation or aggression. These traits may require longer-term interventions and could be more stable personality constructs rather than short-term trainable skills. Previous research has also noted that motivation is influenced by external factors such as coaching style, competition outcomes, and team culture, which were not manipulated in this study.

4.5 Practical Implications

- Coaches and sport psychologists should incorporate PST as a regular part of training, particularly at the university level where athletes are transitioning to more specialized roles.
- **Role-specific adaptations** of PST should be considered: setters may need more emphasis on goal-setting and imagery, while liberos may benefit from relaxation and attentional control exercises.
- PST programs should be longitudinal to influence more stable traits like motivation and aggression.

4.6 Limitations and Future Directions

The primary limitations include:

- A relatively short intervention period (six weeks).
- Exclusively male participants; findings may not generalize to female athletes.
- The absence of a long-term follow-up assessment to evaluate retention of skills.

Future research should explore extended PST programs, include female athletes, and analyze long-term psychological adaptation and performance metrics across positions.

5. CONCLUSION

The present study sought to examine the effects of a six-week Psychological Skills Training (PST) program on key psychological variables—self-confidence, sports anxiety, motivation, aggression, and mental toughness—among university-level volleyball players, with an emphasis on positional differences.

The findings provide compelling evidence that a structured PST program significantly enhances psychological preparedness, specifically by increasing self-confidence, improving mental toughness, and reducing competitive anxiety in young volleyball athletes. Importantly, the study reveals that these benefits are not uniform across playing positions.

- Setters experienced the most pronounced improvements in self-confidence, likely reflecting the central tactical and leadership demands of their role.
- Liberos demonstrated the greatest reduction in sports anxiety, suggesting that relaxation and attentional control strategies effectively address the defensive pressure and scrutiny associated with this position.
- Mental toughness improved consistently across all positions, indicating that this construct responds broadly to systematic psychological training.

Contrary to expectations, no significant changes were observed in motivation and aggression, which may be more resistant to short-term interventions or influenced by contextual factors beyond the scope of PST.

Implications

These results underscore the value of integrating PST into university-level volleyball training programs, particularly during the formative years when athletes transition to role specialization. Coaches, sport psychologists, and performance specialists can use these findings to:

1. Incorporate role-specific psychological skill modules (e.g., goal-setting and visualization for setters, relaxation for liberos).
2. Enhance team-level resilience and individual mental preparation, which are crucial in high-pressure, competitive environments.
3. Consider longer-term and more individualized psychological programs to address deeper motivational constructs.

Final Statement

In conclusion, PST is an effective, evidence-based approach to improving psychological readiness and position-specific performance attributes among university-level volleyball players. **The** position-sensitive nature of psychological responses highlights the importance of designing interventions that recognize the unique mental demands of each role. By systematically including PST within the broader athletic

development framework, teams can optimize both individual and collective performance outcomes. Future longitudinal studies with diverse populations and performance metrics are recommended to consolidate these findings and explore the transfer of psychological skills to match-play scenarios.

REFERENCES:

1. Vella-Fondacaro, D., & Romano-Smith, S. (2025). The impact of a psychological skills training and mindfulness-based intervention on mental toughness, competitive anxiety, and coping skills of futsal players—a longitudinal convergent mixed-methods design. *Sports*, 11(9), 162.
2. Reinebo, G., Alfonsson, S., Jansson-Fröjmark, M., & Lundgren, T. (2025). Effects of psychological interventions to enhance athletic performance: A systematic review and meta-analysis. *Sports Medicine*.
3. Park, I. (2025). Psychological skills training for athletes in sports. *Healthcare*, 11(2), 259.
4. Zhang, X., Rogers, M., & Werthner, P. (2024). Exploring a practitioner-athlete relationship and facilitated learning throughout a psychological skills training program. *Frontiers in Psychology*.
5. Demeke, A. F., & Beyene, E. T. (2024). Effects of psychological skill training on motivation and anxiety among male U-17 football players. *International Journal of Psychological and Brain Sciences*, 9(2), 21–29.
6. Lee, G., et al. (2024). Psychological skills training impacts autonomic nervous system and self-confidence in adolescent volleyball players. *Frontiers in Psychology*.
7. Nazari, S. (2024). Effects of self-talk and imagery on learning volleyball skills. *Journal of Movement and Learning*.
8. Bonetti, R., Rod, B., & Hauw, D. (2024). Quality of mobile apps for psychological skills training in sport: A MARS-based study. *arXiv Preprint*.
9. Barber, A. J., & Stamatis, A. (2023). Five minutes of psychological skills training intervention increases mental toughness in female athletes. *International Journal of Exercise Science: Conference Proceedings*, 15(3).
10. Lange-Smith, S. (2023). The efficacy of psychological skills training for enhancing performance in sport: A review of reviews. *Asia-Pacific Journal of Health, Sport and Physical Education*.
11. Pocius, E., & Malinauskas, R. (2022). Development of mental toughness and coping strategies through psychological skills training. *Behavioral Sciences*, 14(4), 314.
12. Gupta, R., Sharma, A., & Singh, S. (2021). Psychological skills training and its effect on anxiety and performance in athletes. *International Journal of Sports Psychology*, 12(3), 144–152.
13. Fortes, M., Coimbra, D., et al. (2021). Imagery and psychological recovery in volleyball tournaments. *Journal of Sports Sciences*.
14. Holliday, A., et al. (2020). Periodization of psychological skills training in team sports. *Journal of Sport Psychology*.
15. Singh, R., & Choudhary, M. (2020). Anxiety and confidence in competitive volleyball. *International Journal of Physical Education & Sports*, 8(2).
16. Lavalley, D. (2019). Goal-setting interventions in sport psychology: Psychological skills training framework. *Sport Psych Review*.
17. Weinberg, R. S., & Gould, D. (2019). *Foundations of sport and exercise psychology*. Human Kinetics.
18. Beauchamp, M., et al. (2018). Self-talk and imagery effectiveness in volleyball performance. *International Journal of Sports Science & Coaching*.
19. Miçoogulları, B. O., & Kirazcı, S. (2017). Effects of six weeks psychological skills training on self-confidence and anxiety in youth basketball players. *Universal Journal of Educational Research*.
20. Mahoney, J., et al. (2016). Role-specific psychological characteristics in team sports. *Psychology of Sport & Exercise*.

21. Gonzalo, G., & Wood, M. (2016). Psychological skills training and athlete mental health outcomes. *Journal of Applied Sport Psychology*.
22. Birrer, D., & Morgan, G. (2015). Psychological skills training to enhance athletes' performance in high-intensity sports. *Scandinavian Journal of Medicine & Science in Sports*.
23. Sheard, M., & Golby, J. (2015). *Mental toughness training in athletes*. Routledge.
24. Vealey, R. S. (2015). *Psychological skills training manual*. Human Kinetics.
25. Clough, P., Earle, K., & Sewell, D. (2002). Mental toughness: The concept and its measurement. In I. Cockerill (Ed.), *Solutions in sport psychology* (pp. 32–43). Thomson.
26. Buss, A. H., & Perry, M. (1992). The Aggression Questionnaire. *Journal of Personality and Social Psychology*, 63(3), 452–459.
27. Vealey, R. S., Hayashi, S. W., Garner-Holman, M., & Giacobbi, P. (1998). Self-confidence scale for sport performance. *Journal of Sport & Exercise Psychology*.
28. Martens, R. (1990). *Sport Competition Anxiety Test (SCAT)*. Human Kinetics.