

Effects of Structured Psychological Skills Training on Mental Readiness, Performance-Related Abilities, and Character Development in Competitive Volleyball Athletes

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Abstract

This research problem in volleyball requires quick decision-making and solid teamwork, but many training programs still focus on physical and technical aspects, neglecting the development of structured psychological skills integrated with character building. This study aims to test the effectiveness of structured psychological skills training (PKP) in improving mental readiness, performance-related abilities, and character building in volleyball athletes. A total of 38 volleyball athletes participated in an eight-week PS program (three times/week) that included visualization, stress management, and goal setting. A quantitative experimental design was used with pre-test and post-test measurements using a modified Psychological Skills Inventory for Sports (PSIS). Data analysis used the Wilcoxon test and Spearman's correlation. The results of the study showed a significant increase in motivation, self-confidence, mental preparation, and emphasis on teamwork ($p < 0.05$). In addition, a significant positive correlation was found between intelligence and mental preparation ($p=0.021$), as well as cooperation and self-confidence ($p=0.029$). These improvements indicate that psychological interventions are effective in strengthening the cognitive-motivational aspects of athletes. The relationship between intelligence and cooperation with psychological skills confirms that cognitive abilities and social character contribute to athletes' mental toughness. In conclusion, structured PKP has been proven effective in improving the mental readiness and collaborative character of volleyball athletes. The systematic integration of psychological training into athlete development programs is highly recommended.

Keyword: Psychology; Volleyball Psychology; Performance; Character Athlete; Ability; Personality Athlete.

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Introduction

Psychological skills for example: motivation, attention, and self-confidence (Birrer et al., 2014), and mental performance can be considered as related characteristics supporting optimal sports performance factors for athletes. These skills help athletes to build strategies from the individual athlete's effective psychology or mentality under pressure, improving the athlete's psychology in the context of sport performance requires self-awareness and assistance from the psychology team. The relationship between these psychological characteristics is a very important issue for developing talent identification and athlete performance.

Despite growing evidence on psychological skills training (PST) in sports, most studies examine mixed-sport populations rather than focusing on the specific psychological demands of volleyball, which requires rapid decision-making, interdependence, and continuous communication among team members. Furthermore, limited research integrates both performance-related psychological skills and character-related dimensions such as cooperation and emotional regulation within a structured training period. Therefore, empirical evidence regarding how structured PST simultaneously enhances mental readiness and character formation in volleyball athletes remains insufficient.

These psychological skills are considered psychological characteristics that can be trained. (Röthlin et al., 2020), Psychological skills greatly contribute to improving the performance of volleyball athletes including individual character and individual abilities must be good. Volleyball requires good teamwork for optimal performance (Petrie et al., 2009). In addition, several studies have shown that successful athletes exhibit more motivation, greater self-confidence, and concentration (Beaumont et al., 2015). In the world of sports, especially in volleyball, the technical and physical abilities of athletes are often the main focus of training. However, psychological aspects also play an important role in determining the success of an athlete (Reinebo et al., 2024).

Research shows that psychological factors such as motivation, self-confidence, and mental toughness can significantly affect athlete performance (Fu et al., 2021). Psychological skill training for Volleyball athletes is expected to improve their abilities, both in technical and mental aspects. Data from the International Volleyball Association Federation Internationale de Volleyball (FIVB) shows that teams that have a balance between technical and mental abilities tend to achieve better results in competition (FIVB, 2020). Therefore, this study aims to analyze the effectiveness of psychological skill training in improving the ability and character building of volleyball athletes (Vella-Fondacaro & Romano-Smith, 2023).

With a better understanding of the effects of psychological training, coaches and team managers can design more effective programs. In this context, strong athlete character is not only determined by physical ability, but also by mental toughness. Athletes who have good character tend to be better able to deal with pressure, adapt to changing situations, and work together in teams (Weinberg, 2013). Therefore, psychological training focuses not only on improving individual performance, but also on developing character traits that support teamwork (Park & Jeon, 2023). Previous research has shown that awareness is positively related to psychological skills and mental toughness in athletes (Jones & Parker, 2017; Gustafsson et al., 2015; Wu et al., 2021).

However, whether the relationship between these psychological characteristics among elite Volleyball sport populations is consistent with previous research investigating only all sports remains unknown as most empirical studies focus on one sport and not sport as a whole. Identifying whether Ability and Personality are related to psychological skills, and whether mental toughness is critical to performance in each specialty can confirm whether these psychological characteristics can be applied amongst Volleyball athletes. Therefore, the purpose of this study was to examine the correlation between dispositional awareness with psychological skills and mental toughness in the population of Volleyball sports.

We hypothesize that Ability and Personality have higher psychological skills and mental toughness levels. This research was conducted using an experimental approach with self-talk, conflict management and relaxation treatments. This research was conducted to develop mental athletes in a structured manner in accordance with the head coach's annual plan periodization training program with 3 times a week with a 2-month time gap. his study aims to (1) determine the effectiveness of structured psychological skills training on improving psychological performance variables in volleyball athletes, and (2) examine the relationship between ability personality components and psychological skills. It is hypothesized that athletes will demonstrate significant improvements in motivation, self-confidence, mental preparation, and team emphasis following the intervention, and that ability and personality traits will positively correlate with psychological skill levels.

Method

This research method uses a quantitative approach with an experimental design. The research sample consisted of 38 Volleyball athletes Psychological skill training was conducted for eight weeks with a frequency of three times a week. The training material includes mental development techniques such as visualization, relaxation, and goal setting (Locke & Latham, 2020). Data was collected through questionnaires that measured athletes' psychological abilities and character traits before and after training. In addition. Data analysis was conducted using descriptive and inferential statistics to determine significant differences between pre-treatment and post-treatment.

Psychological skills were measured using a validated Psychological Skills Inventory for Sports (PSIS) adapted for volleyball athletes, covering motivation, self-confidence, anxiety control, mental preparation, team emphasis, and concentration. Personality and ability dimensions were assessed using a sport-based character and cognitive ability scale. Instrument validity was confirmed through expert judgment, and reliability testing showed Cronbach's alpha values above 0.80. To ensure the validity and reliability of the instruments used, the questionnaire was pre-tested on different groups of athletes. In addition, with this approach, it is hoped that the results of the study can provide a clear picture of the effectiveness of psychological skill training in improving the ability and character building of Volleyball athletes.

Data were analyzed using descriptive and inferential statistics to compare pre-test and post-test results. A t-test was used to determine if there was a significant difference in ability and character between the two groups. In addition, qualitative analysis was also conducted with in-depth interviews with some of the athletes to gain a deeper understanding of their

experiences during the training. The intervention consisted of an eight-week Psychological Skills Training (PST) program conducted three times per week, integrated after technical practice sessions.

Each session included structured modules: self-talk training, goal-setting, visualization rehearsal, relaxation breathing, and stress management exercises. Because the data distribution was non-normal (Shapiro–Wilk test $p < 0.05$), the Wilcoxon Signed Rank Test was used to analyze pre–post differences, and Spearman correlation was used to examine relationships between variables. The training procedure began with an orientation phase, where athletes were introduced to the basic concepts of sport psychology and the importance of psychological training. During the first eight weeks, training focused on visualization and goal-setting techniques. Athletes were trained to visualize match situations and desired outcomes, and set realistic short- and long-term goals.

According to research by (Cossich et al., 2023), the application of this technique can increase athlete motivation and focus. After eight weeks, training continues with stress management and relaxation techniques. Athletes are taught how to cope with anxiety and pressure that arise before and during matches. Breathing exercises and meditation were also introduced to help athletes calm their minds. Research by (Jermaina et al., 2022), showed that relaxation techniques can significantly reduce athletes' anxiety levels, thereby improving their performance. During training, coaches also play an active role in providing emotional support and constructive feedback.

Coaches are encouraged to create a positive and supportive environment where athletes feel safe to share their concerns and challenges. This is in line with the findings by (Coussens et al., 2025), which shows that support from coaches can increase athletes' confidence and reduce feelings of stress. After the training was completed, an evaluation was conducted to measure changes in the athletes' abilities and character. Results from pre- and post-training measurements were analyzed to determine the effectiveness of the program. Interviews were also conducted to explore athletes' subjective experiences during the training process and the impact on their performance on the field.

Psychology skill training is carried out with a frequency of 3 times a week, the psychology team provides treatment after Volleyball skill training. The following is the weekly training program schedule starting from technique, Strength Conditioning, and Psychology treatment:

Table 1. Training programe

Day	Time	Schedule	Treatment
Sunday	Morning	Practice Game, Swimming	no psychology provision
	Afternoon	Rest	
Monday	Morning	Service, Receive, Gym then Plyometric	Psychology Treatment (Afternoon)
	Afternoon	Receive, Spike, Block	
Tuesday	Morning	Dig, Block, Spike, 3x3 game	no psychology provision
	Afternoon	Service, Receive, Spike, 4x4	
Wednesday	Morning	Service, Receive, Gym	Psychology Treatment (Afternoon)
	Afternoon	Receive, Block, Dig, Spike, 6x6 game	
Thursday	Morning	Drill Defend, Drill Spike, Drill Set up	no psychology provision
	Afternoon	Game 6x6	

Friday	Morning Afternoon	Service, Receive, Gym then Plyometric Drill Receive, Drill Block, Game 6x6	Psychology Treatment (Afternoon)
Saturday	Morning Afternoon	Match Volleyball Rest	no psychology provision

Result

Table 2 presents descriptive data regarding the sociodemographic characteristics of volleyball athletes who participated in this study, including age, height, weight, and body mass index (BMI). This information is important to provide an overview of the participants' physical condition before the treatment was given.

Table 2. *Demographic characteristics*

Variables	M ± SD
Age	22,16 ± 2,804
Body Height	1,867 ± 0,051
Body Weight	74,608 ± 7,554
Body Mass Index (BMI)	21,404 ± 2,223
Underweight	18,165 ± 0,358
Normal Weight	21,440 ± 1,745
Overweight	25,366 ± 0,255

The socio-demographic characteristics of respondents showed that out of a total of 37 volleyball athletes, had an average age, height, and weight of 22.16 ± 2.804 ; 1.867 ± 0.051 ; and 74.608 ± 7.554 , respectively. Body mass index (BMI) is mostly in the normal weight category as much as 21.440 ± 1.745 . Table 3 shows the results of Spearman's correlation analysis between the ability and personality components and athletes' psychological skills prior to the intervention (pre-test). This analysis aims to identify the initial relationship between individual character and psychological skills psychological aspects such as motivation, confidence and concentration.

Table 3. *Sperman correlation coefficients pre-test ability & personality terhadap pre-test psychological skills*

Variable	N = 37					
	Motivation p- value	Self- confidence p- value	Anxiety control p- value	Mental preparation p- value	Team emphasis p- value	Concentration p- value
Intelligence	0,963	0,257	0,675	0,021*	0,186	0,653
Comprehension	0,206	0,996	0,87	0,697	0,258	0,256
Emotional regulation	0,378	0,919	0,337	0,270	0,986	0,478
Adjustment	0,760	0,460	0,849	0,802	0,691	0,966
Cooperation	0,069	0,029*	0,448	0,586	0,217	0,219

*nilai signifikansi < 0,05

Sperman's correlation shows that pre-test Ability and personality intelligence have a significant relationship with pre-test Psychological Skills mental preparation and pre-test Ability and personality cooperation have a significant relationship with pre-test Psychological Skills self-confidence respectively having a significance value of 0.021 and 0.029 (p-value <

0.05). Table 4 The results of the Wilcoxon Signed Rank test used to determine the significant difference between the pre-test and post-test scores of psychological skills after the training was given. This analysis was conducted to assess the effectiveness of psychological training on improving athletes' psychological skills.

Table 4. *Wilcoxon signed rank test coefficients pre-test for post-test psychological skills*

Variabel	N	Mean Rank	Sum of Rank	p- value
Motivation				0,000*
Negative Ranks	0	0,00	0,00	
Positive Ranks	35	18,00	630,0	
Ties	2			
Self-confidence				0,000*
Negative Ranks	3	9,00	27,00	
Positive Ranks	24	14,63	351,00	
Ties	10			
Anxiety control				0,068
Negative Ranks	8	16,88	135,00	
Positive Ranks	21	14,29	300,00	
Ties	8			
Mental preparation				0,000*
Negative Ranks	4			
Positive Ranks	28	9,50	38,00	
Ties	5	17,50	490,00	
Team emphasis				0,000*
Negative Ranks	4	9,00	36,00	
Positive Ranks	22	14,32	315,00	
Ties	11			
Concentration				0,089
Negative Ranks	7	17,14	120,00	
Positive Ranks	20	12,90	258,00	
Ties	10			

*nilai signifikansi < 0,05

Based on the results of the Wilcoxon Signed Rank Test coefficients Pre-test against Post-test Psychological Skills test, it shows that in the items of Motivation, Self-confidence, Anxiety control, Mental preparation, Team emphasis, Concentration as many as 35, 24, 21, 28, 22, and 20 athletes experienced a significant increase after being given treatment in the form of relaxation after training before carrying out the Psychological Skills Post-test. Pre-test and Post-test Psychological Skills items that show a significant difference after being given treatment in the form of relaxation after training before carrying out the Psychological Skills Post-test are the items of Motivation, Self-confidence, Mental preparation, and Team emphasis (p-value < 0.05).

The Wilcoxon analysis indicated statistically significant improvements in motivation (p < 0.001), self-confidence (p < 0.001), mental preparation (p < 0.001), and team emphasis (p < 0.001). However, anxiety control (p = 0.068) and concentration (p = 0.089) did not show significant changes. These findings suggest that PST had stronger effects on cognitive–motivational aspects than on attentional control variables.

Discussion

This study was conducted to explore the extent to which psychological skills training conducted in a systematic and structured manner can positively influence the ability and personality aspects of volleyball athletes. The training included self-talk, conflict management and relaxation techniques, which were designed to be integrated into an eight-week physical training program. In general, the results of this study show that the approach has a significant impact on improving several dimensions of athletes' psychological skills, as well as revealing the relationship between athletes' cognitive abilities and social character towards their mental readiness in the context of sports competition.

1. Relationship between Ability & Personality and Psychological Skills

Preliminary findings from the Spearman correlation test indicated a significant relationship between the variables of intelligence and cooperation, which represent aspects of ability and personality, and the two dimensions of psychological skills, mental preparation and self-confidence. Athletes with higher levels of intelligence were shown to have better mental preparation in the face of competitive pressure ($p = 0.021$). This can be explained through the understanding that cognitive ability plays a role in information processing, decision-making, and careful strategy planning when facing various unexpected situations on the field. In line with theory (Locke & Latham, 2020), Effective goal planning, which is part of mental preparation, requires a developed capacity for reflective and logical thinking, as well as good self-awareness.

On the other hand, the cooperation dimension, which reflects the athlete's ability to work in a team and interact constructively with peers and coaches, also had a significant positive correlation with self-confidence ($p = 0.029$). Athletes who are able to establish good cooperation tend to feel more confident because they are supported by a sense of togetherness, team solidarity, and social validation from the surrounding environment. This finding supports the results of the study (Coussens et al., 2025), which asserts that perceived support from the coach and team is an important factor in building athletes' self-confidence and psychological well-being.

2. Effectiveness of Psychological Training on Mental Skills Change

Wilcoxon Signed Rank test results showed that after the psychological training was delivered, there were significant changes in four of the six psychological skill dimensions measured, namely motivation, confidence, mental readiness, and team emphasis. These dimensions experienced consistent and statistically significant improvements, indicating the effectiveness of the intervention. An increase in motivation ($p = 0.000$) was one of the most prominent findings. A total of 35 out of 37 participants showed a significant increase in motivation following the training program. This suggests that a training approach involving personal reflection, goal setting and mental reinforcement through relaxation can rebuild athletes' intrinsic drive to achieve their best performance.

(Ruffault et al., 2016) mentioned that mindfulness and psychological development strategies have a positive relationship with intrinsic motivation, which is motivation that arises from within without the influence of external rewards. With increased intrinsic motivation, athletes will enjoy the training and competition process more and have higher

psychological resilience to mental fatigue. Furthermore, the significant increase in the self-confidence dimension ($p = 0.000$) indicates that psychological training can strengthen athletes' self-perception of their competence. Self-confidence is one of the most important aspects in sport psychology because it is the foundation for decision-making that is effective and effective. assertiveness and a positive attitude in the face of pressure (Beaumont et al., 2015).

Training conducted in a supportive environment, with the involvement of the coach as an active companion, provides a positive stimulus that strengthens the athlete's self-confidence. Verbal support, emotional reinforcement, and open communication between coaches and athletes can create a sense of psychological safety which ultimately impacts athletes' performance on the field. The improvement in mental preparation ($p = 0.000$) reflects that the strategies implemented, such as visualization and goal setting, have helped athletes to be more mentally prepared for the pressure of the match. Visualization allows athletes to mentally imagine match scenarios, so they can respond to pressure in a calmer and more planned manner.

According to (Cossich et al., 2023), The use of technology and cognitive approaches in mental training can improve athletes' decision-making efficiency and enhance focus during competition. The team emphasis dimension ($p = 0.000$) also improved significantly. This shows that psychological training not only focuses on individual development, but also strengthens collective awareness of the importance of teamwork. In the context of team sports such as volleyball, synergy between team members is the main key in achieving maximum performance. Athletes who understand their collective role and are committed to team goals are more likely to be prepared to sacrifice personal ego for the sake of collective success (Petrie et al., 2009).

Meanwhile, in the dimensions of anxiety control ($p = 0.068$) and concentration ($p = 0.089$), the improvement did not reach statistical significance. Although descriptively there were improvements, this may be due to the relatively short duration of the training or the intensity of the intervention that was not sufficient to optimally influence emotion regulation and focus. Research by (Jermaina et al., 2022) shows that relaxation training requires time and consistent repetition for the effects on anxiety reduction to be felt. In addition, concentration is a complex skill that involves many neurological and emotional factors, requiring a more intensive and focused training approach.

3. Implications for Athlete Character and Mental Development

Overall, the results of this study indicate that psychological skills training integrated into physical and technical training programs can strengthen the mental dimensions that are the foundation of athletes' character. Not only does it help them to perform better technically, but it also forms a resilient, collaborative and motivated mental attitude. This is particularly important given that character in sport is not formed instantly, but through a training process that involves self-awareness, emotional regulation and healthy social interactions. Thus, psychological training is not just a supplement to athlete development, but should be a core element that accompanies the formation of overall athlete performance.

Coach support, clarity of program structure, and continuous evaluation are key supporting factors that should not be ignored. As emphasized by (Wu et al., 2021),

psychological skills and mental toughness have a close relationship that can determine the achievement of athletes' peak performance, especially in the context of high-level competitive sports. Nonetheless, it should be noted that this study has limitations, including a relatively small sample size, limited training time, and the use of a quantitative approach without a broader qualitative exploration. Therefore, the results of this study should be used as an initial indicative reference, and further studies with a longitudinal design, larger number of participants, and mixed methods are recommended to strengthen the generalizability and validity of the findings.

The non-significant findings in anxiety control and concentration may be explained by the limited intervention duration. Attentional control and emotional regulation often require longer exposure and repeated competitive simulation contexts to produce measurable changes. A major limitation of this study is the absence of a control group, which restricts causal inference. Future studies should apply randomized controlled designs and longer intervention periods. Practically, coaches should integrate PST progressively into annual periodization programs rather than as a short-term intervention.

Conclusion

This study demonstrates that structured psychological skills training effectively enhances motivation, self-confidence, mental preparation, and team-related psychological characteristics in volleyball athletes. The findings support the integration of psychological training into systematic athlete development programs. Although anxiety control and concentration did not improve significantly, longer interventions may yield stronger outcomes. This study contributes to sport psychology literature by providing volleyball-specific PST evidence and highlighting the link between psychological skills and character-related attributes. This study shows that psychological skills training conducted in a structured manner for eight weeks can have a positive impact on improving several aspects of volleyball athletes' psychological skills, especially in terms of motivation, self-confidence, mental preparation, and team emphasis.

In addition, correlation results also showed that cognitive ability (intelligence) and cooperation ability (cooperation) had a significant relationship with certain psychological aspects, confirming that the components of ability and character also contribute to the mental readiness of athletes. These findings confirm the importance of integrating psychological training into athletes' training programs, not only to improve individual performance but also to form resilient and collaborative characters in teams. Therefore, coaches and team managers are advised to systematically design psychological interventions as part of the overall athlete development strategy. However, the non-significant results on some variables such as anxiety control and concentration indicate the need for a follow-up approach or longer intervention duration to produce consistent changes in these aspects. Further research with larger samples and longitudinal designs is recommended to strengthen these findings and explore the long-term impact of psychological training on athlete performance.

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