

The Influence of Volleyball Training on the Psychological Health Development of College Students

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Abstract

In order to understand the impact of volleyball training on the mental health development of students, the author proposes a study on the impact of volleyball training on the mental health development of college students. A volleyball player from a sports university in a certain city, by using literature review, questionnaire, interview, and data statistics methods, factor analysis was conducted on the factors that affect the competition status of college volleyball players. A total of 90 questionnaires were distributed to athletes, with 85 questionnaires collected, with a recovery rate of 93%, 81 valid questionnaires were collected, with a response rate of 95%. Among the 90 factors that affect the smooth state of college volleyball players in competitions, there are 5 main common factors, namely "scientific and reasonable training before the competition", "mutual trust among teammates", "detailed understanding of opponents before the competition", "communication with teammates during the competition", and "positive and optimistic attitude during the competition". Through psychological training, volleyball players can achieve a high level of psychological preparation to meet the requirements of the competition. According to the individual situation of the team members and the needs of the game, appropriate psychological training methods are adopted to enable them to adjust and control their psychological state to adapt to the intense competition and perform at a high level. Therefore, it is necessary to grasp the psychological factors and training methods of volleyball players. A good psychological state plays an important role in winning training competitions for volleyball athletes, psychological state is an ideology that involves being completely and selflessly engaged in a task, and being able to fully or exceptionally demonstrate one's best level of physical activity. It is a way of evaluating the psychological level of volleyball players. The research also discussed the limitations and future directions for further research.

Keywords: Volleyball Training, College Students, Mental Health.

Introduction

With the increasing interest of college students in sports and their level of competitiveness, many universities choose to hold some competitions, which are very intense, volleyball is a highly tactical sport, and naturally, the requirements for each athlete on the field are relatively high, in a volleyball match, every athlete on the field should maintain a tense and prepared state of mind at all times, the game will often make mistakes of varying sizes, which can cause psychological problems for athletes and affect the subsequent competition process, there is a serious contrast in the psychological problems of athletes, it will have a huge impact on the tactical thinking of the entire game. When this situation occurs, athletes do not know how to adjust themselves, and the result is that their understanding of the competition becomes increasingly poor, in this way, all team members will be affected, which may ultimately result in the game not being able to proceed normally, or there will be a significant increase in errors during the game, and even psychological problems that can lead to a loss of confidence in the victory of this game.

The modern high-level volleyball competition is a comprehensive struggle in terms of technology, tactics, body, style, and psychology; they are mutually penetrating, influencing, and supplementing each other (Kreme & Scully, 2003; Musa et al., 2021; Oliinyk et al., 2021).

Volleyball has gradually developed from the initial mass fitness to High-performance sport (Pérez-Turpin et al., 2014; Smolianov, Gallo, & Naylor, 2014). The continuous development of volleyball is accompanied by the continuous updating of volleyball rules and competition system (Kenny & Gregory, 2006; Macquet, 2009; Zhang, 2020). The current scoring system and point ranking method used in volleyball matches for team promotion and ranking exacerbates the competitiveness and intensity of volleyball matches. Each team member should take every ball seriously and responsibly on the field, strive to use the most stable techniques to handle the ball, score with the best results, and also use the lowest error rate to reduce losses. The performance during the competition is not only a test of daily technical training, but also the deepest test of team members' physical and mental abilities. Fluent state is a way of evaluating the level of physical

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fitness of athletes (Van Daalen, 2005; Walker, Weidner, & Armstrong, 2008). It quickly enters a fluid state during a competition, stabilizes the performance of skills, seizes opportunities to improve team morale, and maximizes the cohesion and confidence of the entire team. For this purpose, Psychological factors are crucial for fully utilizing technical and tactical skills in competitions. Therefore, in the process of volleyball training, it is necessary to pay attention to the psychological training of college students, starting from the personal inner world and external environment that affects psychology of college students, imitation exercises should be carried out on various occasions of the competition, so that college students can get used to the psychological changes of the competition, and thus achieve self-reasonable adjustment to participate in the competition in the best physical and mental state. While addressing psychological factors, it is necessary to establish the principle of comprehensive development, correctly understand and scientifically handle the relationship between psychological factors and other factors. Thus, based on previous discussion researcher aimed was to explore the influence of volleyball training on the psychological health development of college students. The findings of this study on the influencing factors of volleyball athletes' state during competitions, particularly focusing on college students' volleyball competitions, hold significant implications for athlete preparation and performance enhancement. By utilizing a comprehensive research methodology, including literature review, questionnaire design, validity testing, and factor analysis, the study has identified 13 main factors that impact the competition state of college volleyball players. These factors encompass various aspects, such as pre-competition preparation, teammate and opponent dynamics, self-confidence and positive attitude, psychological readiness, and competition scenarios. The study has also demonstrated that these factors have different degrees of impact across different sports levels. Understanding these influential factors can aid a significance for coaches and athletes in developing targeted training programs and mental preparation strategies to optimize players' performance and overall psychological well-being during competitions. By addressing the identified areas of improvement and capitalizing on strengths, coaches and athletes can work towards maximizing their potential and achieving greater success on the volleyball court. Moreover, the study highlights the importance of considering both objective and subjective factors that cause psychological changes in athletes during competitions, emphasizing the significance of creating supportive and conducive environments for

athletes to thrive mentally and physically. The research segregated into five chapters, introductions, literature review, research methodology, data analysis and results, discussion and future directions.

Literature Review

Theoretical Review

As we all know, with the development of High-performance sport, the competition on the sports field is becoming increasingly fierce, and the performance gap between athletes is narrowing. In speed events, the determination of victory or defeat is even accurate to one thousandth of a second. In ball games, the victory or defeat of a game often only depends on the handling of one or several key balls. Generally speaking, in contemporary High-performance sport, the competitors with considerable strength are tending to a limit balance in terms of technology, tactics, physical strength, physical conditions, etc. in terms of hard competitive strength. Although these hard competitive strengths are crucial and serve as the foundation and guarantee for winning competitions, the core winning factors that determine the success or failure of modern competitive sports have shifted from tactical, technical, and physical factors to intelligent and motorized regulation, allocation, utilization, and immediate utilization of various strengths. The efficient performance of one's various strengths requires team members to have appropriate, stable, mobile, resilient, and intelligent specialized psychological qualities (Biswas-Diener, Kashdan, & Minhas, 2011; Michinov & Michinov, 2022). Therefore, for opponents with comparable strength, the success or failure depends to a certain extent on the psychological quality of athletes (Birrer & Morgan, 2010). Among the many factors that affect the psychological quality of athletes, stress is one of the important aspects (Gustafsson, Sagar, & Stenling, 2017; Sarkar & Fletcher, 2014). Stress refers to an emotional response of an organism to adapt to the environment under certain environmental stimuli. In the event of sudden changes in the environment or unprepared situations, when encountering difficulties or dangers, people need to make quick decisions to adapt to the danger and resist difficulties, which lead to a state of stress. The uncertainty of competition results, adaptability on the spot, unexpected or unexpected events on the field, external expectations, and personal subjective and objective factors can all cause a certain degree of psychological stress to athletes, so stress is a common psychological phenomenon in sports (Asztalos et al., 2012; Turner et al., 2020).

Therefore, it has also received great attention from sports psychologists. For volleyball players, with the rapid development of volleyball, their comprehensive qualities in height, physical fitness, and other aspects continue to improve. They constantly innovate in tactics and techniques, modify rules, and especially implement the scoring system for each ball, making the competition process more intense and the competition for victory and defeat more suspenseful. In this situation, volleyball players are more susceptible to stress. The emergence of these stresses will lead to a series of physiological and psychological negative effects, such as lower self-confidence, slow movement, technical deformation, muscle stiffness, etc., and in serious cases will also lead to Sports injury, and directly or indirectly affect sports performance. In high-level sports competitions, the negative effects of stress can lead to tense interpersonal relationships, physical damage, and abnormal performance of sports skills among athletes, resulting in countless examples of affecting sports performance (Beckmann & Elbe, 2015; Singh, 2022). For example, in several large-scale events, the Chinese men's volleyball team has suffered from psychological stress factors that have led to abnormal performance in key matches, resulting in losses. For this reason, former national men's volleyball coach Di Anhe once lamented that psychological problems have become a major obstacle to the progress of Chinese men. For example, in the competition for the championship and runner up of the Athens Olympics in, the Chinese women's volleyball team, with a slightly better psychological quality than the Russian women's volleyball team, effectively handled the intense competition and ultimately achieved victory. Therefore, whether athletes can effectively respond to stress largely determines the victory or defeat of the competition. Scholars have pointed out that athletes' adaptability to intense competition stress and on-site handling have become important factors in achieving victory. The battle of high-level sports competition ultimately boils down to the stress response of athletes in the face of sports situations. For athletes, it is necessary to possess corresponding psychological qualities in sports competitions to reduce the stimulation caused by competition stress and adapt to the current situation of competitive sports. In order to improve their stress response ability and enable them to adopt effective response methods in a passionate environment, in order to reduce the negative reactions caused by stress, maintain the physical and mental health of athletes, and ensure the victory of sports competitions, it has become a practical problem that competitive sports need to face and solve. The performance of stress in sports is not only reflected in

the competition process, but also in the long-term and arduous training process. During the training process, athletes also encounter various types of stress. Events such as handling interpersonal relationships between team members, coaching from coaches, and daily chores can all generate stress. In the face of stress, if inappropriate coping style is used, it will not reduce the negative impact caused by stress, but also bring more serious emotional and behavioral consequences, such as tension, lower self-confidence, psychological decline, Sports injury, etc., thus affecting athletes' training enthusiasm and learning of sports tactics and technology. Therefore, how to effectively cope with stress during training and minimize the negative impact of stress has become a topic of great concern for coaches and athletes, which is also one of the starting points of this paper's research.

A large number of previous studies have shown that whether Irritability events eventually lead to mental health damage is not only related to the event itself, but also closely related to individual psychological variables. From a sociological perspective, stress response is the result of low self-efficacy in controlling threats or overload environmental stress. That is to say, if an individual can control, eliminate, or mitigate the severity of a threat event, they have no reason to fear it. Self efficacy is a kind of perception of ability, that is, to believe that they have personal skills and work ability, so that they can act correctly and successfully in specific situations. It is a kind of self confidence in personal ability and skills. If an individual believes that his skills are too poor and low self-efficacy, he or she will think that the event is uncontrollable, and therefore Irritability. When individuals believe that their ability to deal with everything is high self-efficacy, the evaluation may be irrelevant or non Irritability. Therefore, self-efficacy is one of the important variables that affect stress among individual psychological variables.

People with Social anxiety (SA) have a deep-seated fear of being negatively evaluated, and of exposing perceived deficiencies to others. However, under the pressure of the pandemic, the unique impact of previously existing SA on happiness and interpersonal relationship outcomes is currently unclear. In a study conducted by Ho and Moscovitch (2022), we conducted an online survey of 488 North American community participants. We used multiple linear regression to analyze whether retrospective reports of SA symptoms before the pandemic predicted current coronavirus anxiety, loneliness, fear of negative evaluations The use of preventive measures and their ancillary results, as well as whether the pre pandemic functional damage and the recent COVID-19 related stressors have adjusted these relationships # The results

emphasize the negative impact of SA on current mental health functions before the epidemic, especially for the participants with high degree of pre epidemic functional damage and more exposure to COVID-19 related stressors (Ho & Moscovitch, 2022). Kapur, R believes that individuals need to be aware of the causes of depression, which will enable them to feel the psychological problems of depression. After identifying the causes, they need to be prepared in terms of measures and methods to alleviate these problems. Individuals differ due to various factors, namely caste, belief, race, religion, nationality, learning ability, personality characteristics, education background, occupation, category, community and socio-economic background. Therefore, everyone needs to understand the causes of depression and measures to alleviate its adverse effects on their living conditions. In some cases, the cause is insurmountable and must be addressed. However, in other cases, the reasons can be overcome and individuals can effectively address these issues. Therefore, in order to promote people's normal mentality, do their job well, improve their overall quality of life, and identify the causes of depression, it is crucial (Kapur, 2021).

In order to understand the impact of volleyball training on the mental health development of students, the author proposes a study on the impact of volleyball training on the mental health development of college students. A volleyball player from a sports university in a certain city, by using literature review, questionnaire, interview, and data statistics methods, factor analysis was conducted on the factors that affect the competition status of college volleyball players.

Empirical Review

The Factors Influencing Psychological Changes of College Students in Volleyball Competition Training

(1) Factors Affecting Psychological Changes of College Students Before Competitions

With the continuous improvement of college students' sports level, the impact of psychological quality on the game is more and more obvious, whether in the game against strong teams or weak teams can be reflected. When facing a strong team, pre match athletes often exhibit a psychological state of tension, depression, and lack of confidence due to the strength of their opponents. When facing weak teams, they often unconsciously display a mentality of belittling opponents and blindly confident (Zhou, 2021).

(2) Personal Factors

College students hope to achieve excellent results when participating in competitions, but each athlete's different

cognition, attitude, and preparation for the competition can exhibit various emotional states. Some college students lack a correct self-evaluation of them before the competition, overestimate their strength, have blind confidence in the competition, and underestimate the difficulties and complexity. Athletes in this psychological state may seem excited, but they are not calm enough, unable to think calmly, blindly optimistic, ignore difficulties, and cannot mobilize all their strength to overcome them. In a competition, once encountering setbacks or failures, emotions will plummet, feel helpless, and even give up the competition. Some college students are overly nervous before the competition, mainly manifested as anxiety, panic, premature excitement, and even fear, inability to concentrate, accelerated heart rhythm, shortness of breath, and thirst. Some athletes exhibit low emotions, slow physical movements, lack of fighting spirit, depression, unwillingness to participate in the competition or inability to fully devote themselves to the competition, indifference to errors on the field, and self-abandonment. This psychological phenomenon is mainly caused by the personal factors of college students, such as excessive fatigue before the competition, poor ideological style, failure to correctly understand the purpose of the competition, reverse psychology, and unwillingness to participate in the competition (Tong & Li, 2021).

(3) Factors Affecting Psychological Changes of College Students During Competitions

Competition environment factors. During formal competitions, due to the presence of spectators, the competition environment is significantly different from the usual training environment, and the training environment is generally relatively quiet, as there are no other people on the field besides the trained college students and coaches, college students are not affected by external factors, but in formal competitions, it is different as the audience can cause various disturbances to the athletes in the competition. For example, the cheers and cheers of our fans towards the athletes, the boos and boos of the opposing fans, and so on. These distractions from the audience are all external factors that affect the normal performance of athletes in competitions.

Score factor. The score factor also affects the psychological changes of college students during volleyball matches. When the team's score is at an advantage, their skills are normal, but they are prone to developing a sense of pride, often inadvertently relaxing excessively, and sometimes making unnecessary mistakes. When the score is at a disadvantage, team members are prone to lose confidence, develop restlessness, and make more mistakes due to psychological instability; When the scores of both sides are close, college students often experience negative emotions, excessive

nervousness, distorted movements, and abnormal behavior, especially in key scores, in order for our team to win over their opponents, some players are eager to achieve success in handling the ball, but the result is the opposite, causing unnecessary mistakes and giving the opportunity to the other team; However, some other team members' performance at this critical moment was completely opposite, when attacking, they were afraid of making mistakes and often had a soft hand, when it was time to dunk, they switched to a drop shot, and when the jump serve was stable, they switched to a regular serve to reduce mistakes.

Collective cooperation factors. The continuous use of techniques such as serving, padding, passing, spiking, and blocking in volleyball matches, as well as the composition of various tactics, all require collective efforts to be achieved, the lack of any link will lead to failure, directly affecting the level of collective cooperation. At the same time, it can also cause changes in the individual psychological state of athletes on the spot, especially in the event of a defeat, where peers blame and complain to each other, leading to the disappearance of the collective's sense of cooperation and trust, and the disintegration of cohesion, to a greater extent, it directly damages the personal emotional state of college students on the spot. On the contrary, every successful collective cooperation and ultimate victory, as well as the tacit, harmonious, and coordinated cooperation between peers, can definitely provide athletes with a good mood (Arazi et al., 2021).

Psychological Adjustment Methods for Volleyball Training Competition

When college students appear in a state of losing their emotions and emotions on the spot, it will limit their ability to fully utilize their previously mastered skills and tactics. In order to prevent the occurrence of abnormal competition phenomena or slow down their severity after their occurrence, and to help college students form the best psychology, the following methods can be tried:

(1) Divert Attention

Volleyball players who encounter unexpected situations during a match and are unable to achieve a predetermined goal, may use another goal as a substitute. Be good at distracting attention, diverting excitement, and adjusting and improving the state of psychological activity through the method of diverting attention.

(2) Self Suggestion

Using the time between dead balls or pauses between innings, by using self-language cues to relax muscles and nerves, consciously slow down the pace of deep breathing, imagine yourself in a very relaxed situation, or imagine yourself standing on a beach with a gentle evening breeze, competing

with blooming flowers to relieve mental tension, don't mind temporary poor mood, let alone create pressure, focus on recalling successful experiences and scenarios from past competitions, and prepare mentally for future competitions.

(3) Enter Character

Generally speaking, the more an athlete can enter their role during a competition, the less likely it is for external interference to enter the athlete's field of vision. High level athletes should be good at using this technique, by integrating one's physical and mental abilities with the characters on the field, one can control their technical level to the fullest extent possible, which makes it easier to form a calm on-site mentality and is conducive to achieving the best results.

(4) Willpower Efforts

For certain sudden and unexpected stimuli, athletes apply specific emotions and concepts to occupy their consciousness, through positive willpower, high concentration, high self-control, improvement and overcoming one's own inertia and inhibition, ensuring the quality of completing actions and reducing mistakes.

(5) Unity Among Team Members

During the competition, each team member is in a high state of psychological tension, when a team member performs poorly, their teammates should provide timely support to the team member to enhance their confidence and make them understand that they are a member of the team, everyone should work together, if you don't do well this time, just do well next. This can adjust the emotional fluctuations of college students in a timely manner to quickly stabilize them, focusing on how to play well, rather than constantly thinking about whether their performance is poor and whether the team will blame themselves for it. Previous discussion shown that Psychological factors are crucial for fully utilizing technical and tactical skills in competitions. Therefore, in the process of volleyball training, it is necessary to pay attention to the psychological training of college students, starting from the personal inner world and external environment that affects psychology of college students, imitation exercises should be carried out on various occasions of the competition, so that college students can get used to the psychological changes of the competition, and thus achieve self-reasonable adjustment to participate in the competition in the best physical and mental state. While addressing psychological factors, it is necessary to establish the principle of comprehensive development, correctly understand and scientifically handle the relationship between psychological factors and other factors. As shown in [Figure 1](#).

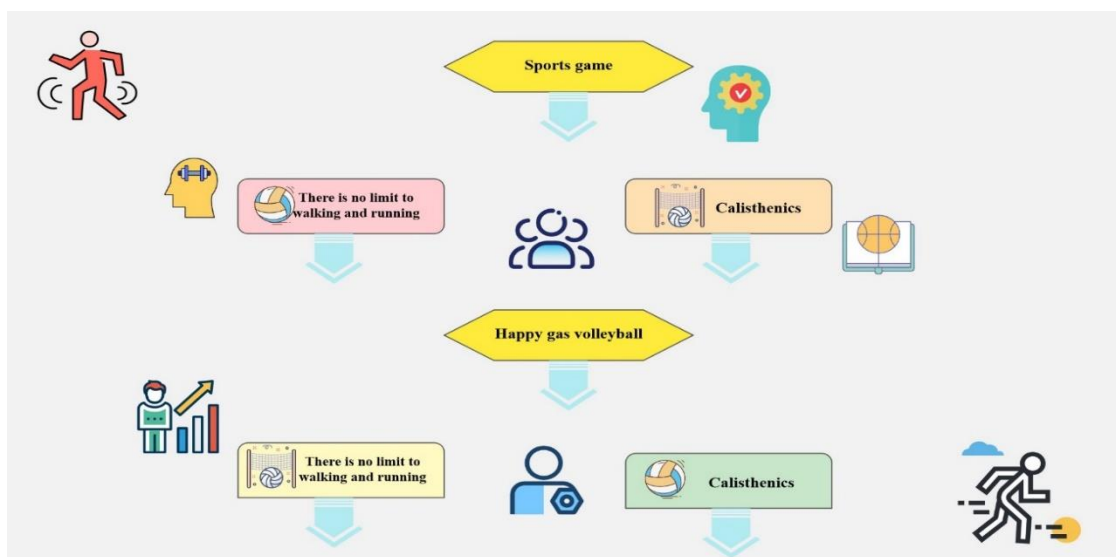


Figure 1. Volleyball Training on Psychological Health of College Students.

Methodology

From the perspective of volleyball training competitions, this study analyzes the influencing factors of volleyball athletes' state, focusing on the factors that affect the state of college students' volleyball competitions. The research has applied mixed method approach where data collected from both of quantitative and qualitative perspective. By searching for literature on CNKI, journals, and English databases, a large amount of domestic and foreign literature on status is collected to search for research methods and achievements adopted by predecessors (Podgórski et al., 2022). The questionnaire method is a research method that uses a unified written question and answer format to obtain the required information from the respondents. Based on the information searched in literature and the results of interviews, the author designed a survey questionnaire on "factors affecting the competition status of college volleyball athletes" and "coaches", and invite experts to provide suggestions for modifying the questionnaire, after multiple revisions and validity testing by experts, a formal questionnaire is finally formed. In the questionnaire, six levels of evaluation are conducted on the degree to which several factors that affect psychological state are in line with one's own situation, namely no impact, very small impact, small impact, average impact, large impact, and very large impact, in

order to form the final "psychological state influencing factors" survey questionnaire (Subramani et al., 2021).

Reliability and Validity Testing of the Questionnaire

By distributing the "Validity Expert Evaluation Questionnaire", a volleyball expert from a sports university was invited to conduct a validity test on the "Questionnaire on Factors Influencing the Competition Status of College Volleyball Players". The overall validity, content validity, and structural validity of the questionnaire are divided into five levels: A. very reasonable, B. relatively reasonable, C. average, D. unreasonable, and E. very unreasonable. The results indicate that the effectiveness of the questionnaire is relatively high.

A total of 90 questionnaires were distributed to athletes, with 85 questionnaires collected, with a recovery rate of 93%, 81 valid questionnaires were collected, with a response rate of 95%. The reliability of the questionnaire was tested using the "retesting method", a second survey was conducted on 25 identical survey subjects every two weeks, and the correlation coefficient between the two surveys was $R=0.8$, $P<0.01$, indicating a high reliability of the questionnaire (Coimbra et al., 2021).

Survey Subjects

The survey subjects are volleyball athletes from a sports university in a certain city, and the specific distribution of the survey subjects is shown in Table 1.

Table 1

Specific Distribution of Athletes' Natural Conditions

	Sexual Distinction		Training Years				Sports Level		
	Man	Woman	1-3	4-6	7-10	11-14	Master	Level 1	Level 2
frequent and continuous	36	40	21	20	30	4	14	18	50
(%)	46%	50%	28%	26%	45%	4%	16%	20%	65%

Table 1 provides specific statistics on the natural distribution of athletes, as shown in Table 1, there is no significant difference in the number of respondents selected in terms of gender, with the majority being college students and professional team athletes. Athletes with training years greater than 10 years are relatively few, accounting for 4%, while those with 7-10 years are the majority, accounting for 45%. In the survey of sports levels, second level athletes accounted for the most, accounting for 65%, while first level athletes and athletes accounted for 20% and 15% respectively.

Interview Method

Interview method is a survey method that obtains the required information through face-to-face conversation and interaction between the visitor and the respondent. Mainly conducting interviews with relevant coaches and athletes, consulting and collecting information on factors affecting volleyball players' competition status.

Results and Discussion

Investigation and Research on the Main Factors Influencing the Competition Status of College Volleyball Training

Based on the data obtained from the questionnaire, analyze the overall order of the impact of each influencing factor on volleyball players. Due to the fact that the level with the greatest impact is 5 and the level with the smallest impact is 0, the larger the value of the data obtained through the mean difference test, the greater the impact of this factor on the athlete's competitive state.

Among the factors that affect athletes' competition status, the highest average level is t1, which is "scientific and reasonable training before the competition" (RM=4.5), followed by t42, which is "mutual trust between teammates" (RM=4.05), the factors with the lowest average level are t86, which indicates poor weather conditions during the competition, and t18, which indicates that the competition needs to be interrupted due to unforeseen circumstances. From the perspective of standard deviation, among the 90 influencing factors, the standard deviation of 0.96 for the factor t10 "detailed understanding of the opponent before the competition" is the smallest, this indicates that among the several influencing factors, this factor is the one with the smallest difference in perception among the surveyed volleyball athletes. Based on the values of average and standard deviation, the main common factors affecting the competition status of college volleyball players are "scientific and reasonable training before the competition", "mutual trust between teammates", "detailed

understanding of opponents before the competition", "communication with teammates during the competition", and "positive and optimistic attitude during the competition" (Zhao & Li, 2022).

Analysis of Factors Influencing the Competition State of College Volleyball Training

After interviews and extensive literature review, combined with expert suggestions, several influencing factors were ultimately determined. Conduct factor analysis on the data obtained from the questionnaire survey. Before analysis, KMO and Bartlett tests were conducted on the questionnaire, the closer the KMO measurement value is to 1, the more suitable it is for factor analysis, factor analysis is not suitable for those below 0.6; When the significance probability value of Bartlett's sphericity test is $P < 0.6$, factor analysis is suitable. From the KMO and Bartlett test results shown in Table 2, it can be seen that the KMO sampling suitability scale is $0.79 > 0.5$, and the significance probability value $P = 0.000 < 0.06$, which reaches a very significant level and is suitable for factor analysis.

Table 2

KMO and Bartlett's Test

KMO and Bartlett inspection
KMO sampling suitability quantity 0.78
Bartlett's Sphericity Test free degree 1780
conspicuousness 0.00

Naming of Main Factors Influencing the Competition State of College Volleyball Players

Through factor analysis of the load of various variables on factors, the factors that affect the competition status of college volleyball players were ultimately determined as 13 factors. According to the characteristics of the factors included in each classified factor, rename each factor. Name each factor as follows:

The first factor includes 14 factors: Positive public opinion support before the game, consecutive loss of points at the beginning of the game, low level of competition, multiple interceptions of spiking, high level of competition tension and intensity, our team's leading score, favorable competition time arrangement, good competition venue and equipment conditions, unexpected events in the competition venue (such as power outage), changes in temperature and geographical conditions (high altitude), familiar competition venue during the competition, the weather conditions were harsh (rain, snow) and the living conditions (food, accommodation, etc.) were not good. Combining these factors with the competition venue, climate, environment, and competition situation on the

field, it is named the competition scenario factor. The second factor includes 13 factors: The support and trust of the coach before the game, the coach's serious expression during the game, excessive attention to the coach's evaluation of their performance, positive feedback from the coach during the game, good on-site guidance from the coach, presence of parents or friends during the game, being scolded by the coach during the game, a large audience, a very small audience, applause and cheers from the audience negative social support (audience commotion, media interference, influence from family and friends), having a psychological coach, and proper referees, especially favorable decisions for key balls. This type of factor is mainly related to off court coaches, referees, spectators, and family members, so it is named the non participant factor. The third factor includes 11 factors: Previous defeat to an opponent, verbal encouragement from teammates during the game, communication with teammates during the game, mutual trust between team members during the game, good team form during the game, opponent's previous performance and reputation, difference in opponent's strength compared to what they knew before the game, first encounter with the opponent, strong opponent's physical strength, good use of hand skills and tactics, and strong opponent's momentum during the game. These twelve factors involve opponents and teammates in the game, so this factor is named the opponent and teammates factor. The fourth factor includes 11 factors: A happy mood before the game, no external pressure, liking the sense of words in the game, using language to remind oneself during the game, having confidence in one's own actions during the game, a false and optimistic attitude during the game, striving to surpass oneself during the game, being a top scorer on the field, being skilled in mountain skills, but daring to save the ball, not afraid of injury, and never giving up during the game. The content expressed by these eleven factors reflects the characteristics of volleyball athletes' positive attitude and confidence in themselves on the field during the competition, therefore, this factor is named self-confidence and positive attitude. The fifth factor includes eight factors, including automating the movements in the competition, being timid, grasping the rhythm of the entire game, having no physical injuries, being prepared for the competition, being able to make adjustments to different scenarios, and having new rules or regulations that are unfavorable to oneself. These factors belong to the athlete's own state in the competition, so they are named the self state factor in the competition. The sixth factor includes six factors: Being alone before the game, imagining one's outstanding performance in the game before the game,

preparing mentally before the game, having a detailed understanding of the opponent before the game, entering a state of excitement before the game, and reviewing the coach's tactical intentions before the game. These six factors can better reflect the psychological preparation of volleyball athletes in the pre competition stage, and are named as the pre competition psychological preparation factor (Petridis et al., 2021).

Research on the Differences in Factors Influencing the Competition Status of Men's Volleyball Players of Different Grades

In volleyball matches, players' performance on the field directly affects the psychological state of the entire team, scoring through a good attack and defense chain will greatly boost morale, due to psychological tension leading to unstable technical performance and direct loss of points, the team's morale will be low, and even fall into a scoring drought. The men's volleyball competition is the best manifestation of the competitiveness of volleyball, and how to exert skills and strive for victory in high-intensity, high-speed competitions is the key. The impact of each influencing factor on second level athletes is relatively average, while there are significant differences in the impact on first level athletes and athletes. Overall, the amplitude of the impact factors on second level athletes is relatively small, indicating that there is little difference in the degree of influence among each factor, the overall level tends to be below average, and the overall impact is relatively small. The impact of factors 9 and 13 exceeds the average level, while factors 2 and 11 tend to have a smaller impact. Compared with the second level athletes, the amplitude of the line chart diagram of the influence factors of the first level athletes and athletes is smaller. For level athletes, factor 7 has the greatest impact on their state and tends to have a greater impact; The impact of factors 3, 12, and 14 on first level athletes tends to be very small. Athletes have a relatively high degree of influence on factors 8, 9, and 11, and tend to have a greater level of influence; Factor 12 has little impact on the competitive state of athletes. Overall analysis shows that factor 7 has a relatively significant impact on different levels, factors 8 and 12 have significant differences in their impact on different levels, and factor 11 has a relatively small impact on different levels.

Table 3 shows the test results of multiple comparisons using the Least Significant Difference (LSD) method, from the table, it can be found that: The average difference in the factor of non-field participants between men's volleyball master level athletes and men's volleyball first level athletes is 0.95, indicating a significant difference, master men's

volleyball athletes are more affected by this factor than first level athletes. There was no significant difference in the other 12 factors; there is a significant difference between a master and a second level player in terms of clear goals, competition equipment, and nutritional supply, master athletes are more influenced by the factor of clear goals than second level athletes. There was no significant difference in the other 10 factors; There are significant differences between first level and second level male volleyball players in 7 factors, including off field

participants, teammates and opponents, self-confidence and positive attitude, competition motivation, attention, post competition summary, and nutritional supply, first level athletes are less affected by these six influencing factors than second level athletes. There was no significant difference in the six factors of competition situation, self-condition during the competition, pre competition psychological preparation, appropriate physical preparation, clear and clear goals, and competition equipment.

Table 3

Results of Factors Influencing the Competition Status of Volleyball Players of Different Sports Grades

Order Number	Factors	Master and First Class	Master and Level 2	Level 1 and Level 2
1	Competition scenario	0.042	0	
2	Non field participants	0.936	-0.07	-0.43
3	Teammates and opponents	0.28	-0.36	-1.0
4	Confidence and positive attitude	0.58	-0.05	-0.67
5	Your own state during the competition	0.34	0.35	0.03
6	Psychological preparation before the competition	0.57	-0.09	-0.57

The research results indicate that each influencing factor has different degrees of impact on the competition status of men's volleyball at different sports levels, and significant differences between different sports levels are reflected in different factors, with significant level differences. The review standards for second level volleyball athletes are relatively loose compared to first level and master level athletes, and the review level can only be approved in provincial competitions, therefore, second level volleyball athletes are inferior in terms of technical and tactical mastery, competition experience, and confidence compared to first level and master level athletes, and are more susceptible to external interference, therefore, there are many factors that have significant differences between second level and elite athletes, as well as between second level and first level athletes. There is not much difference in the impact on the competition state between top athletes and top athletes. There is only a significant difference in the factor of "non field participants", which indicates that first level athletes need to further improve their psychological endurance by the audience, off field environment, as well as judges, coaches, and other personnel, striving to enter a psychological state to the maximum extent possible, fully immersing themselves in the competition, and not paying attention to the influence of other factors (Amoli et al., 2021).

Objective Factors That Cause Psychological Changes in Athletes During Competitions

The environmental factors composed of different competition venues, time and space, different competition equipment, cheerleading performance, and audience atmosphere can all create certain pressure on the psychological state of athletes on the spot, if athletes cannot adapt and adjust well, it will affect their technical level (Abbiss & Laursen, 2008; Coimbra et al., 2021; Gee, 2010; Lidor & Ziv, 2010). During the competition, if the lighting is too bright or too dark, the ball used in the competition is different from the one used during training, it may be hard or soft, the playing field may feel uncomfortable, and the color or style of the clothes worn may change, all of which can have a certain impact on the athletes' emotions. The audience's sound is generally 96 decibels, sometimes reaching over 100 decibels. When the noise exceeds 85 decibels, most people will feel restless and restless. And the audience's shouting often has a significant psychological impact on athletes, providing stimulation specifically before or after athletes make technical mistakes, which makes players feel panicked or difficult to concentrate. Since 1996, volleyball has developed rapidly. It has been widely used in both competitive events and ordinary people. However, with the continuous improvement of sports level, traditional manual training methods can no longer meet the existing technical requirements. The use of computers to analyze volleyball

trajectory is a mainstream method in volleyball training. However, there are still some technical issues, such as low accuracy and incomplete analysis. Therefore, Jiao and G proposed research on volleyball trajectory acquisition and intelligent analysis technology. This article systematically analyzes the shortcomings of existing technologies and proposes optimization and improvement plans based on this. The core technology of this project is to improve the original image preprocessing technology and enhance the system's feature extraction ability. Finally, the technical solution of this article was formed by combining the camshaft motion target tracking algorithm (Jiao, 2021).

The series application of techniques and the composition of various tactics in competitions require collective efforts to be achieved, the lack of any link will lead to failure, directly affecting the level of collective cooperation, and also causing changes in the individual psychological level of athletes on the spot. The tacit understanding and harmonious cooperation among peers can provide athletes with a good mood. Maintain a suitable emotional state during the competition, correctly handle temporary gains and losses during the competition, and boldly, carefully, and timely adjust oneself. Improve and overcome one's own temperament and inhibition to ensure the normal performance of technical and tactical skills.

Based on previous discussion, it is concluded that this is necessary to cultivate athletes' good psychological qualities in training and competitions to ensure the stable performance of various skills. The characteristics of students themselves determine their shortcomings in completing technical and tactical processes. Therefore, in daily training, coaches need to analyze the factors that affect the subjective and objective aspects of athletes' psychology, and provide scientific guidance and training based on the content and methods of psychological factor training, so that athletes can stably play the skills and tactics of the team and team members in various situations. The comprehensive and coordinated development of team members' physical and mental abilities lays a solid foundation for achieving victory in the competition.

For individual athletes, due to their lack of enough attention to their own professional stress, and their lack of Systems science understanding of the source, occurrence process, impact and consequences of stress, it is impossible to choose a suitable stress coping style for individuals. Therefore, it is urgent to improve athletes' understanding of their own occupational stress and popularize some commonly used coping strategies and methods, which is particularly important. Specifically, it is necessary to appropriately incorporate relevant psychological content into daily training. It is necessary to impart theoretical

knowledge, enable them to understand stress, recognize stress, and face stress correctly. It is also necessary to operate and train in similar situations, such as simulating stress events for various stress response training. For some athletes who are prone to tension, it is very necessary to let them learn effective Relaxation technique to ease tension and make it easier for them to control their own mental state.

Practical and Theoretical Contributions

The research has practical and theoretical contributions which added a body of literature in the extant literature. Practically, the coaches and trainers could use the identified influencing factors as a guide to design training programs that specifically target the psychological aspects of athletes. For example, incorporating mental skills training and relaxation techniques can help athletes build self-confidence and positive attitudes. Additionally, fostering a supportive team environment and promoting effective communication among teammates can strengthen team cohesion and trust, leading to better on-court performance. Understanding the impact of external factors, such as audience support and competition venue conditions, allows coaches to prepare athletes to handle potential distractions and pressure effectively. Moreover, the study's focus on college volleyball athletes suggests that universities and sports institutions should prioritize the mental well-being and psychological preparation of their athletes, not just technical training. In order to improve athletes' mental toughness and performance in competitive contexts, this may result in the formation of specialized sports psychology support services inside institutions.

Theoretically, however, the results of this research have important significance for preparation and training of collegiate volleyball players. From a theoretical standpoint, the study identified the important elements that affect volleyball athletes' competitive status, including scientific and reasonable training before competitions, trust between teammates, and knowledge of opponents' in-depth, communication during competitions, and a positive and upbeat attitude. Coaches as well as sports psychologists can better understand the psychological dynamics of athletes during tournaments by being aware of these elements. In order to improve players' competitive states, it emphasizes the significance of mental preparation, team cohesiveness, and good communication. Additionally, the component analysis and comparison of other sports grades revealed the distinct psychological requirements of athletes at various levels, supplying a framework for treatments and

training plans that were specifically catered to their skill levels and competitive history.

Limitations and Future Directions

This study, which has mostly concentrated on significant discoveries of influencing elements in college volleyball athletes' contests, still has certain drawbacks. The study's initial concentration on athletes from a sports institution in a particular location may have limited the findings' applicability to a larger group of volleyball players. Self-reported surveys may also induce answer bias since participants might not always be truthful in describing their genuine emotions or experiences. Furthermore, the study used cross-sectional data, resulting in it challenging to draw conclusions about the causal connections between the parameters found and the athletes' competitive level. For examining how these characteristics change over time, longitudinal studies would be more suited.

Future studies can think about enlarging the study to include a more varied and representative sample of volleyball players from other colleges and areas in order to solve the study's flaws. Investigators could be enabled to follow changes in athletes' psychological conditions and performance over time through longitudinal studies, which would provide a clearer knowledge of the causal linkages between different elements. Furthermore, combining self-report surveys with objective measurements (such as physiological data, performance statistics, etc.) might offer a more thorough evaluation of an athlete's competitive state. Additionally, qualitative research techniques like in-depth interviews or focus groups may provide insightful information on how athletes feel and evaluate the things that affect their performance. Future study can offer a more nuanced and comprehensive knowledge of the psychological elements impacting volleyball competitors during contests by combining both quantitative and qualitative methodologies.

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