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Sports Vision in a Non-Specific Sports Environment: The Effect on the Functional Ability and Mood of Young Iraqi Volleyball Players Under Psychological Pressure

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A B S T R A C T

Objective: The purpose of the present study was to compare the effect of a sports vision training period (general sports vision stimuli with general motor actions), combined training (general sports vision stimuli with volleyball-specific motor actions), and specialized training (sport-specific visual stimuli in a volleyball context) on the functional ability and mood of young Iraqi volleyball players under psychological pressure.
Methods and Materials: In this quasi-experimental study, forty-two participants were purposefully selected and randomly assigned into three groups (14 people each): sports vision training, combined training, and specialized/traditional training. To measure functional ability, the repeated effort test (Shawon et al., 2013) was used. Mood was measured using the 32-item BRUMS mood states questionnaire. To determine trait anxiety, the Illinois SCAT questionnaire (SCAT) was administered, and to determine state anxiety, the Competitive State Anxiety Inventory-2 (CSAI-2) was employed. In order to induce psychological pressure in the post-test, a combined method of monitoring and comparison was used. Data were analyzed using multivariate analysis of covariance (MANCOVA) and the Bonferroni post-hoc test.
Findings: The results indicated a statistically significant difference in functional ability between the combined training group and the specialized/traditional group in favor of the combined training group ($p = 0.01$). In terms of positive mood components, no statistically significant difference was found between the sports vision training and combined training groups ($p \geq 0.05$). However, there was a statistically significant difference between the sports vision training and specialized/traditional groups, and also between the combined training and specialized/traditional groups ($p \leq 0.05$). For negative mood components, a statistically significant difference was observed only between the combined training and specialized/traditional groups ($p \leq 0.05$).
Conclusion: Direct and indirect effects of sports vision training can assist coaches and athletes in diversifying their training programs and may be used as a tool to manage competitive psychological pressure.
Keywords: *Functional ability, sports vision, psychological pressure, mood, volleyball.*

1. Introduction

Engaging in professional competitive sports, such as volleyball, requires athletes to make decisions within seconds, coordinate their limbs across various degrees of freedom, and maintain precise motor control under psychological pressure (Capin, 2024; Singh, 2024; Thomas-Acaro, 2024). All of these challenges occur while coping with the psychological stress imposed by the perception of outcomes related to comparison, evaluation, and victory or defeat. Choking under psychological pressure is a term used to describe suboptimal athletic performance in stressful conditions (Niu, 2023; Singh et al., 2023; Zhu, 2023).

It is argued that attentional theories provide a clearer explanation for choking under pressure, as these theories aim to explain how the cognitive representation of a skill changes under high-pressure situations. One such theory is the distraction theory. Psychological pressure increases the importance of optimal performance in a specific situation. It has been shown that this factor can increase arousal, anxiety, and stress, which in turn affect an individual's perception of the psychological pressure they experience (Martens & Smith, 2017).

Previous studies have shown that emotions are predictors of performance. A significant challenge in preventing poor performance is reducing the intensity of unpleasant emotions. Athletes' mood, as one of these emotions, has garnered increasing attention and has been studied in various sports and competitive levels. However, the relationship between training type and mood remains unclear, as evidenced by conflicting findings in existing studies (Nematollahi & Eslami, 2019). Weinberg and Gould (2014) consider psychological and mental factors as the primary reasons for daily fluctuations in athletic performance (Weinberg & Gould, 2020).

Volleyball requires psychological and performance components, which can significantly alter the outcome. Given the modern approach to sports, traditional training programs are receiving less attention, while training programs that simulate competition conditions are increasingly favored. Volleyball-specific performance components are particularly well-received by coaches. The focus on performance components in volleyball aims to simulate target movements rather than isolating specific muscles. These movements include directional changes, level changes, and movement patterns (Moa, 2024)s.

Performance elements are not isolated but are performed as multi-joint movements within patterns or movement chains that align with the sport and the ultimate training goal. Performance components challenge proprioception, motor control, and the central nervous system. During these training sessions, the nervous system learns to control entire movements and plan optimal decisions (Brandão et al., 2021). Additionally, such training enhances athletes' sensory responses, which serve as the nervous system's language by collecting environmental information, transmitting it to the central nervous system, and determining the next movement through prediction (Eskandarnejhad et al., 2021).

Identifying and employing innovative methods to enhance athletic performance and achieve greater success is a foundational principle in professional sports. Coaches, athletes, and researchers strive to improve athlete performance through scientific research, experimentation, and collaboration (Appelbaum & Erickson, 2018). These efforts contribute to progress and innovation in the sports world. Accordingly, the development and implementation of novel training programs, with a greater emphasis on improving athletes' psychological and performance components, have been the focus of researchers (Abed, 2018).

Although the skills required by athletes vary depending on the type of sport and specific conditions within a sport, athletes capable of processing more information in a shorter time and providing appropriate motor responses are more likely to succeed in competition. This underscores the importance of visual information in executing human movements (Babaei & Badami, 2019).

Among the new training methods gaining attention from coaches is sports vision training. Sports vision is an interdisciplinary specialty aimed at improving the visual system's performance to achieve benefits in trained sports. Good visual processing and fast reaction speed distinguish excellent performance, both of which can be improved through sports vision training regardless of the athlete's performance level (Nascimento et al., 2020). Evidence suggests that the visual system, like other bodily systems, can be trained and improved through specific vision exercises, similar to how athletes use sport-specific training methods to enhance overall performance. The perceptual components of the visual system can also be improved through sports vision training (Buscemi et al., 2024; Schwab & Memmert, 2012).

While interest in sports vision training for athletic performance is increasing, questions remain regarding whether these improvements can transfer to specific motor skills and performance, particularly under psychological

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pressure, and how this transfer might affect mood and functional skills. Therefore, the aim of this study is to compare the effects of sports vision training (general sports vision stimuli with general motor actions), combined training (general sports vision stimuli with volleyball-specific motor actions), and specialized training (sport-specific visual stimuli in the volleyball context) on the functional ability and mood of young Iraqi volleyball players under psychological pressure.

The findings of this study may contribute valuable knowledge to this field for the target population. Additionally, the results can provide valuable insights to volleyball coaches, athletes, and sports officials in Iraq.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a quasi-experimental design for data collection and was conducted with an applied purpose, using a pretest-posttest field design. The study population comprised young volleyball players with at least three years of experience in volleyball. Through purposive sampling, 60 young Iraqi male volleyball players were initially selected based on inclusion criteria (normal vision, a minimum of three years of volleyball experience, no history of eye surgery, no use of lenses or glasses, male gender, right-handedness, no use of sedative drugs, and no membership in professional club teams). Due to non-cooperation by 10 participants at the start and withdrawal of eight participants during the study (after the orientation session and pretest), a total of 42 participants (age: 18.61 ± 0.98 years, height: 1.82 ± 0.13 m, weight: 89.09 ± 3.74 kg, trait anxiety: 16.71 ± 1.08) completed the study. They were randomly divided into three groups of 14 participants each: sports vision training, combined training, and specialized/traditional training.

After a call for participants and selection, 42 individuals were purposively sampled based on trait anxiety scores (15–20). They were randomly assigned to three groups of 14 participants each: sports vision training, combined training, and specialized/traditional training. In the pretest phase, all participants underwent the Repeated Effort Test, and their scores were recorded. For standardized analysis, the combined T-scores for vertical jump and movement time in the maximum effort test were used. Mood scores were collected using the BRUMS mood states questionnaire.

The two experimental groups, sports vision training and combined training, participated in their respective training programs for nine weeks. The specialized/traditional group did not undergo any specific intervention and continued their regular training programs. In the post-test, after inducing psychological pressure, the study variables were reassessed for all three groups.

The two experimental groups trained according to a nine-week program, with three 90-minute sessions per week (10 minutes for warm-up, 30 minutes for the intervention, and 20–30 minutes for physical exercises based on volleyball components, such as agility drills involving T-pattern, horizontal, and diagonal movements). Each intervention session was designed as a circuit, with participants rotating through five stations for six minutes each.

In the post-test, a combined method of observation and comparison was used to create psychological pressure (Esmaili et al., 2019). Four cameras were installed at different points on the volleyball court to record participants' performance, adding performance pressure. Additionally, expert coaches from the Iraqi Volleyball Federation, involved in national team selection and club management, were invited to evaluate participants, introducing evaluation pressure. A monetary incentive of 300,000 Iraqi dinars was also offered to the best-performing participants. Participants completed the Competitive State Anxiety Inventory and the BRUMS questionnaire before undergoing service accuracy and spike tests, with scores recorded.

To minimize the impact of physical activity on test results, participants were instructed to avoid intense exercise two days prior to the post-test.

2.2. Measures

Snellen Visual Acuity Test: Before participant selection, volleyball players' vision was assessed using the Snellen visual acuity test. Participants with normal vision and a perfect score were eligible to enter the study.

Trait Anxiety Scale: Trait anxiety was measured using the Illinois SCAT questionnaire, which consists of 15 questions based on a Likert scale. The questionnaire includes five dummy questions, with reverse scoring for questions 6 and 11. Scores range from 10 (low trait anxiety) to 30 (high trait anxiety), with scores above 20 indicating high anxiety, scores between 15 and 20 indicating moderate anxiety, and scores below 14 indicating low anxiety. The questionnaire has demonstrated acceptable validity and reliability, with test-retest correlation coefficients ranging from 73% to 88% and an average of 81%. Internal consistency reliability coefficients for children and adults range from 95% to 97% (Zahedi & Yazdi, 2023).

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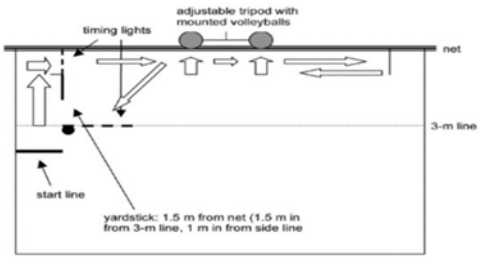
State Anxiety Inventory: State anxiety was assessed using the Competitive State Anxiety Inventory-2 (CSAI-2) (Martens et al., 1990). This inventory comprises 29 items divided into three subscales: cognitive anxiety, somatic anxiety, and self-confidence. Each subscale contains nine items, with scores ranging from 9 to 36 per subscale. The inventory has shown adequate reliability and validity. Cronbach's alpha reliability coefficients for the subscales range from 0.78 to 0.80 for cognitive anxiety, 0.81 to 0.83 for somatic anxiety, and 0.87 to 0.91 for self-confidence (Zahedi & Yazdi, 2023).

Repeated Effort Test for Functional Ability Evaluation: The Repeated Effort Test was used to evaluate volleyball players' functional ability. This test assesses the ability to perform repeated physical activities specific to volleyball, including two attacks, four defenses, and lateral movements simulating volleyball gameplay patterns. The test consists of four 20-second repetitions with rest periods of 4 to 8 seconds between repetitions. The test measures vertical jump height, lateral movement times, and technical errors such as net touches or improper defenses. Measurements were accurately recorded using devices such as vertical jump meters and stopwatches. Participants were given opportunities to practice and familiarize themselves with the instructions before the main test. One or two low-intensity trials were conducted to provide feedback for performance correction. The test effectively distinguishes between players of varying abilities and is sensitive to specific training interventions, making it suitable for evaluating performance changes after training programs (Jyrkkä et al., 2011; Lara-Ruiz et al., 2019).

Figure 1

Repeated Effort Test for Evaluating Functional Ability in Volleyball Players



BRUMS Mood States Questionnaire: The BRUMS 32-item mood states questionnaire was used to assess athletes' mood, specifically evaluating both positive and negative mood dimensions. It includes eight subscales, divided into positive dimensions (vigor, calmness, and happiness; 12 items total) and negative dimensions (tension, depression, anger, fatigue, and confusion; 20 items total). Each item is scored on a five-point Likert scale ranging from 0 ("not at all") to 5 ("completely"). The questionnaire has been validated in various studies conducted in Malaysia, Brazil, and Iran, with satisfactory Cronbach's alpha coefficients reported for each subscale. In Iran, Farrokhi et al. (2013) demonstrated that the Persian version of the questionnaire exhibits acceptable validity and reliability, with high goodness-of-fit indices, internal consistency, and temporal stability (Mehrsafar et al., 2021).

2.3. Interventions

The intervention programs, adapted from Formenti et al. (2019), targeted visual skills such as peripheral vision, saccadic eye movements, and convergence skills, combined with motor tasks requiring maximum speed. Each station was marked with boards placed on a wall 1.5 meters above the ground, featuring colored targets, letters, and numbers. Training programs were structured into three difficulty levels: Level 1 (Sessions 1–9), Level 2 (Sessions 10–18), and Level 3 (Sessions 19–27).

- **Sports Vision Training Group:** This program included exercises to enhance visual attention and focus in variable environments. Participants were instructed to move their gaze across various targets on the wall while maintaining focus. The difficulty increased progressively with tasks performed while standing on two feet, one foot, and foam pads. The goal was to improve visual processing and competitive volleyball performance.
- **Combined Training Group:** In addition to sports vision exercises, participants used volleyballs, requiring them to maintain ball control during drills. This included tasks involving ball movement

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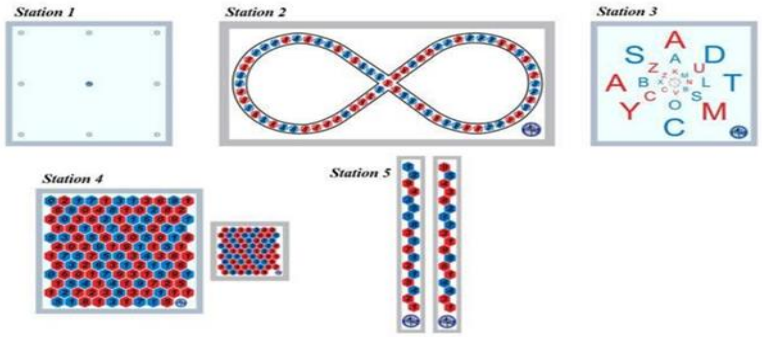
and volleyball skills, requiring enhanced visual-motor coordination.

- **Specialized/Traditional Training Group:** This group focused on repetitive volleyball skill drills and small-sided games designed to improve technical abilities in real-game scenarios.

Figure 2

Visual Boards Used in the Sports Vision and Combined Training Groups, Adapted from Formenti et al. (2019).



2.4. Data Analysis

Data were analyzed using multivariate analysis of covariance (MANCOVA) and Bonferroni post hoc tests with SPSS version 23. A significance level of $p < 0.05$ was set.

3. Findings and Results

The data in Table 1 indicate that state competitive anxiety increased from pretest to post-test across all three groups. The lowest pretest functional ability score was observed in the sports vision group, while the highest post-test negative mood score was recorded in the specialized/traditional group. The combined training group achieved the highest positive mood score in the post-test.

Table 1

Comparison of Mean and Standard Deviation of Variables Across Three Groups

Test	Group	Pretest (M ± SD)	Post-test (M ± SD)
State Competitive Anxiety	Sports Vision	50.14 ± 2.56	51.35 ± 2.40
	Combined Training	50.07 ± 1.59	51.42 ± 1.34
	Specialized/Traditional	49.71 ± 2.30	53.85 ± 1.65
Functional Ability	Sports Vision	95.06 ± 18.17	96.92 ± 18.66
	Combined Training	106.10 ± 8.10	100.78 ± 8.55
	Specialized/Traditional	98.33 ± 12.88	102.28 ± 14.66
Negative Mood	Sports Vision	12.21 ± 2.45	18.92 ± 1.54
	Combined Training	13.14 ± 2.03	19.00 ± 1.24
	Specialized/Traditional	13.07 ± 1.97	20.28 ± 1.20
Positive Mood	Sports Vision	7.28 ± 1.48	4.92 ± 1.38
	Combined Training	7.50 ± 1.82	5.07 ± 1.73
	Specialized/Traditional	7.50 ± 2.10	3.14 ± 1.16

After confirming the necessary assumptions, including normal distribution of data ($p \geq 0.05$), homogeneity of variances among groups ($p \geq 0.05$), and linear relationship between covariates and dependent variables (functional ability * group: $p = 0.41$, $F(2) = 0.89$; positive mood * group: $p = 0.08$, $F(2) = 2.70$; negative mood * group: $p = 0.96$, $F(2) = 0.03$), as well as verifying the Box's M test (Box = 13.34, $p = 0.45$, $F(12, 7371) = 0.98$), the data were analyzed using analysis of covariance (ANCOVA).

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Table 2

ANCOVA Results Comparing the Effects of Training Type on Study Variables Under Psychological Pressure

Source	Variable	Sum of Squares	df	Mean Square	F	p	η^2	Power
Pretest	Functional Ability	6102.99	1	6102.99	119.61	<0.001	0.76	1.00
	Positive Mood	0.29	1	0.29	0.38	0.54	0.01	0.09
	Negative Mood	0.44	1	0.44	0.34	0.56	0.01	0.08
Group	Functional Ability	477.01	2	238.50	4.67	0.01	0.20	0.75
	Positive Mood	35.32	2	17.66	23.12	<0.001	0.56	1.00
	Negative Mood	13.51	2	6.75	5.20	0.01	0.22	0.76
Error	Functional Ability	1836.87	36	51.02				
	Positive Mood	25.81	36	0.71				
	Negative Mood	45.65	36	1.26				

The results in Table 2 indicate statistically significant differences among the groups for the study variables ($p \leq 0.05$).

Table 3

Bonferroni Post-Hoc Test Results for Pairwise Comparisons of Study Variables

Variable	Group Comparison	Mean Difference	Standard Error	p
Functional Ability	Sports Vision vs. Combined Training	-6.33	2.89	0.10
	Sports Vision vs. Specialized/Traditional	-1.87	2.75	1.00
	Combined Training vs. Specialized/Traditional	-8.21	2.76	0.01
Positive Mood	Sports Vision vs. Combined Training	-0.10	0.33	1.00
	Sports Vision vs. Specialized/Traditional	2.01	0.33	<0.001
	Combined Training vs. Specialized/Traditional	1.90	0.33	<0.001
Negative Mood	Sports Vision vs. Combined Training	0.26	0.44	1.00
	Sports Vision vs. Specialized/Traditional	-1.05	0.43	0.06
	Combined Training vs. Specialized/Traditional	-1.31	0.43	0.01

The data in Table 3 reveal that for functional ability, a statistically significant difference was observed only between the combined training and specialized/traditional groups. For positive mood, no statistically significant difference was found between the sports vision and combined training groups, whereas significant differences were observed between the sports vision and specialized/traditional groups, and between the combined training and specialized/traditional groups. For negative mood, a significant difference was found only between the combined training and specialized/traditional groups.

4. Discussion and Conclusion

The purpose of this study was to compare the effects of sports vision and combined training (which required either general or volleyball-specific motor actions) in a non-specialized setting with those of a third group engaged in specialized/traditional volleyball training in a volleyball context, on the functional ability and psychological skills of young Iraqi volleyball players under psychological pressure.

The results of the multivariate analysis of covariance indicated statistically significant differences among the three groups—sports vision, combined training, and specialized/traditional training—in terms of functional ability, positive mood, and negative mood scores under psychological pressure ($p \leq 0.05$). After controlling for pretest functional ability scores, 20% of this difference could be attributed to the research intervention. Pairwise comparisons revealed a significant difference in favor of the combined training group compared to the specialized/traditional group ($p = 0.01$). Since no previous research was found that specifically compared the functional abilities of volleyball players under psychological pressure, emphasizing sports vision training, we draw on studies that relate to our research or have been conducted in other sports.

This finding aligns with prior studies (Abed, 2018; Alfailakawi, 2016; Babaei & Badami, 2019; Buscemi et al., 2024; Nascimento et al., 2020; Nazari et al., 2021; Schwab & Memmert, 2012; Wilson & Falkel, 2004; Wood & Abernethy, 1997; Zahedi & Yazdi, 2023). Williams et al.

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(2018) found that both traditional and functional training groups showed significant improvements in performance indices compared to the control group, with greater improvements observed in the functional training group. Alfailakawi (2016) examined the effect of sports vision training on visual functions and shooting performance in young handball players. Results showed that sports vision training affects handball shooting performance and noted that it primarily enhances the "software" aspect of the visual system—i.e., having a stronger impact on the cognitive aspects of vision rather than its "hardware" or biological aspects (Alfailakawi, 2016). Abed (2018), in a study on the effect of sports vision training on the specialized defensive performance of volleyball's libero, reported that a period of sports vision training had a significant effect on motor performance, service reception, and footwork in libero players (Abed, 2018). However, it should be noted that Abed's findings were reported under non-stressful conditions, whereas the present study was conducted under psychological pressure.

Currently, there is a stronger inclination toward training programs that closely simulate competition conditions, and volleyball-specific performance components have been well-received by coaches. The goal is to simulate target movements rather than isolating specific muscles, involving changes in direction, level, and movement patterns (Abed, 2018). Performance elements are not executed in isolation but are rather performed as multi-joint movements in a movement chain aligned with the sport and final training objective. The comprehensive nature of these elements means that multiple factors—strength, stability, balance, and coordination—operate simultaneously as a chain. These performance components challenge proprioception, motor control, and the central nervous system. During these training regimens, the nervous system learns to control the entire movement and make the best decisions in planning these actions (Nikolaidou et al., 2023; Trecroci et al., 2021). Additionally, this training improves sensory responses, which are the "language" of the nervous system. Through this process, the nervous system gathers environmental information, sends it to the central nervous system, and determines the next movement via anticipation (Abd El-Mahmoud, 2008).

In comparing the adjusted post-test scores for functional ability between the sports vision and combined training groups, although there was a difference favoring the sports vision group, it was not statistically significant. Furthermore, when comparing the sports vision group (M ± SD: 101.54 ± 1.92) with the specialized/traditional group (M ± SD: 103.37 ± 1.88), the specialized/traditional group displayed better performance, although not significantly so. Given that the specialized/traditional group focuses on executing typical on-court volleyball techniques—particularly rapid movements similar to the tasks evaluated in the maximum effort test—this group could logically be expected to perform better. Additionally, it is possible that psychological stress and pressure had a lesser impact on the functional abilities of this group. Overall, the results suggest that the environment in which training is conducted plays a key role in enhancing perception and action in sport-specific skills, supporting the ecological approach to learning and sports performance (Trecroci et al., 2021). Since the specialized/traditional group adhered to their routine program, it is not surprising that they achieved better functional ability compared to the two other groups. Given that functional ability (as measured by the Repeated Effort Test) involves jumping, blocking, agility, and speed, it can be assumed that neuromuscular recruitment—strongly driven by specialized training that improves muscle strength and power—plays a primary role in enhancing functional performance.

According to the results, positive mood scores decreased from pretest to post-test for all three groups, in line with their perception of psychological pressure. The adjusted post-test means for the sports vision training (5.01 ± 0.23) and combined training (5.02 ± 0.23) groups were very similar, suggesting that both groups perceived psychological pressure at comparable levels for positive mood dimensions. In contrast, the specialized/traditional group (3.09 ± 0.23) scored lower. This finding suggests that sports vision training helped the sports vision and combined training groups maintain a more positive mood under stress. The sports vision intervention likely enabled participants to be less influenced by negative factors such as evaluation and comparison, allowing them to better regulate their emotions—whereas the specialized/traditional group was more affected by evaluative and environmental pressures (presence of coaches and cameras). Models emphasizing within-individual focus, such as the Individual Zones of Optimal Functioning, may offer insights into the relationships between mood, emotion, and performance (Hanin, 1980).

Negative mood (tension, depression, anger, fatigue, and confusion) increased from pretest to post-test across all three groups under psychological pressure. The adjusted post-test means in the sports vision training group (19.12 ± 0.31,

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54.95% increase) and combined training group (19.31 ± 0.31, 44.60% increase) suggest that even though the combined training group experienced slightly less stress, the difference was not statistically significant. However, in the specialized/traditional group (20.20 ± 0.31, 55.16% increase), the growth in negative mood components was more pronounced, explaining the significant difference between the specialized/traditional and combined groups. In other words, compared to the other two interventions (particularly the specialized/traditional approach), combined training more effectively helped young volleyball players manage negative mood under psychological pressure.

Murayama et al. (2007) employed a qualitative grounded theory approach to investigate the process of "choking under pressure." Their inductive analysis revealed that psychological factors (e.g., irrational thoughts and negative emotions) and physiological responses (e.g., sympathetic nervous system activation) contribute to performance decline (Murayama & Sekiya, 2015). Notably, the effects of stress and pressure in competitive environments—especially for young athletes—are inevitable, but strategies for managing and controlling these conditions are a major concern for coaches. It appears that sports vision intervention, alongside routine volleyball training, can offer both direct physiological benefits and indirect psychological advantages to young volleyball players. Stress and maladaptive stress responses arise when individuals assess the environment (comparison and evaluation) as a threat to their well-being. The brain prioritizes coping with the perceived threat, sometimes at the expense of immediate tasks and goals (Siyaguna, 2019). Sports vision training may unconsciously and indirectly help participants reprioritize their goals, benefiting the sports vision and combined training groups, whereas the specialized/traditional group lacks such benefits. A challenge state emerges when an individual believes they have sufficient resources to meet situational demands, while a threat state emerges when resources are deemed insufficient (Buscemi et al., 2024). This difference appears more evident in the specialized/traditional group. According to the transactional theory of stress, positive appraisals reflect the perception of stress as manageable, whereas negative appraisals suggest a potentially threatening situation (Nazari et al., 2021; Schwab & Memmert, 2012). A challenge state can induce various emotions, whereas a threat state correlates only with negative emotions (negative mood). These emotional dynamics influence focus, decision-making, and physical performance, all of which are critical for successful sports performance (Wilson & Falkel, 2004).

In this study, the sports vision and combined training groups coped better with psychological pressure than the specialized/traditional group, likely due to sports vision training. No significant differences emerged between the sports vision and combined training groups. The specialized/traditional group showed better overall functional performance, implying that functional abilities depend on specific domains and tasks. Put differently, the training environment is key to improving perception and action in sport-specific skills, consistent with the ecological approach. Notably, one of the most important findings here is the indirect psychological benefit of sports vision training: improving young Iraqi volleyball players' ability to sustain positive mood and mitigate the destructive impact of negative mood under stress. These direct and indirect effects can assist coaches and athletes in diversifying training programs and serve as a valuable tool for reducing stress and psychological pressure in competition—conditions inherently linked to psychological burden.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

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The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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