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TECHNICAL PROFICIENCY OF MALE VOLLEYBALL ATHLETES AT SAIGON UNIVERSITY, VIETNAM

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Abstract:
In modern volleyball, technical proficiency is considered a fundamental determinant of competitive performance. Hence, the study was conducted to propose technical-performance tests in order to assess the current technical level and technical development of male volleyball athletes of the Saigon University team, Vietnam. To do it, the study employed document analysis and synthesis, expert surveys, pedagogical testing, and statistical methods. The research participants included 20 male athletes from the Saigon University volleyball team and 30 experts, specialists, and lecturers with extensive experience in volleyball coaching and training. Eight tests has been selected as follows: Serve reception from position 5 to position 3 (times), Topspin jump serves to the deep court (last 3 m) (times), Float jump serves to the deep court (last 3 m) (times), Outside attack from position 4 (times), Right-side attack from position (times), Quick middle attack from position 3 (times), Overhead set from zone 3 to zone 4 following reception from zone 5 (times), and Overhead set from zone 3 to zone 2 following reception from zone 5 (times). After one year of training, the athletes' performances in all of the technical

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tests have shown improvements, with growth rates ranging from 4.55% to 6.27%. These improvements were noted statistically significant ($P < 0.001$).

Keywords: technique, male athletes, volleyball, Saigon University, Vietnam

1. Introduction

Volleyball is a popular sport that is played for the aims of recreation and physical development. Facilities for volleyball playing have been established in many areas; however, most activities remain recreational or amateur in nature, and investment in systematic training is still limited [1]. This has led to the fact that young talents do not receive adequate attention, making it difficult to build a stable and high-quality athlete pipeline for competitive volleyball.

Modern volleyball is a fast-paced and dynamic sport that requires a high level of technical skill and tactical awareness. The game is played at high intensity, with frequent transitions and a strong emphasis on controlling the ball above the net. To perform effectively, volleyball athletes are required to satisfy specific criteria on height, speed, agility, and adaptability, and technical skills. In other words, alongside physical fitness, technical proficiency is essential for effective play, and among all volleyball skills, spiking is one of the most decisive factors influencing team success.

In sports science, technical performance is considered the most effective way of executing sport-specific movements [3]. Sporting performance depends largely on the effectiveness of technical and tactical training. Well-developed technique represents the most efficient manner of executing sport-specific movements to achieve optimal performance. When their technical skills are formed in accordance with biomechanical and biochemical principles, athletes would be able to perform movements more effectively [4]. In other words, athletes with comprehensive and refined technical skills are more likely to perform a wider range of tactics, thereby improving their competitive efficiency [5], [6].

In volleyball, technical skills are classified into offensive and defensive techniques, each comprising movement skills and ball-contact skills. Movement techniques include ready position, walking, running, and jumping. Offensive techniques consist of serving, setting, and spiking, while defensive techniques involve receiving and blocking [7], [8].

A key characteristic of volleyball is the continuous rotation of player positions, requiring athletes to perform both offensive and defensive roles. Front-row players are responsible for spiking and blocking, whereas back-row players focus on defense and organizing attacks. This structure demands versatile, flexible, and well-coordinated technical abilities. Athletes often have to respond quickly to changing situations, adjust movement direction efficiently, and execute sequences of skills within short and unpredictable time frames. Hence, it could be stated that regardless of physical advantages, players with deficient technical proficiency are still unlikely to meet the demands of modern volleyball [9].

In contemporary volleyball, offensive and defensive actions are closely interconnected, as many techniques can either score points or create opportunities for the opponent through errors. This dual nature increases the complexity of technical evaluation and highlights the importance of stable, adaptable skill execution. Consequently, improving technical proficiency is crucial in modern volleyball training and coaching practice [10], [11], [12]. To achieve this effectively, the first step is to accurately assess individual technical performance using standardized and sport-specific tests, which then provide a basis for selecting appropriate training exercises. This is also the objective of this study titled "Technical Proficiency of Male Volleyball Athletes at Saigon University, Vietnam."

The purpose of the study is to identify tests that provide information on the technical status of male athletes in the volleyball team at Saigon University, Vietnam.

2. Methodology

2.1 Research Methods

2.1.1 Document review and analysis

Synthesized relevant domestic and international literature to systematize theoretical knowledge related to volleyball techniques; analyzed potential tests for assessing volleyball technical performance.

2.1.2 Expert survey

Collected experts' evaluation on the proposed tests to identify appropriate technical-performance tests for male volleyball athletes of the Saigon University team, Vietnam.

2.1.3 Pedagogical testing

Administered technical-performance tests on the male volleyball team to assess their current technical level.

2.1.4 Statistical analysis

Processed the data using statistical methods with the support of SPSS version 22.0.

2.2 Participants

2.2.1 Testees

20 male athletes from the Saigon University volleyball team, Vietnam.

2.2.2 Surveyees

30 experts, specialists, administrators, and university lecturers with extensive experience in teaching and coaching volleyball.

3. Results and Discussion

The assessment of the technical status of male volleyball athletes of the Saigon University team was conducted in two stages:

- **Stage 1:** Identification of technical-performance tests for male volleyball athletes of Saigon University.
- **Stage 2:** Evaluation of the current technical status and technical development of the athletes after one year of training.

3.1. Identification of technical-performance tests for male volleyball athletes of Saigon University

To identify appropriate technical-performance tests, the study followed these steps:

Step 1: Compilation of technical tests

Technical-performance tests in volleyball were collected and synthesized from relevant research of domestic and international authors including Bui Huy Cham (1988) [8], Nguyen Thanh Lam (1998) [13], Nguyen Ngoc Cu et al. (1998) [14], Nguyen Mao – Pham Danh Thuan (2000) [15], Nguyen Huu Hung (2001) [16], Nguyen The Truyen, Nguyen Kim Minh, Tran Quoc Tuan (2002) [17], Nguyen Van Hai (2006) [18], Nguyen Huu Tin (2007) [19], Pham Van Han (2014) [20], Nguyen Van Truong (2014) [21], Le Nguyet Nga et al. (2016) [22], Tran Tri Hai (2016) [23], Nguyen Thi Kieu Thu (2017) [24], Thach Sop Mai Ly (2020) [25], Tran Quoc Tuan (2021) [26], Do Xuan Thanh (2021) [27].

The selection of tests was guided by two main principles: (1) measurability and (2) comparability across individuals, regions, and countries [28]. Based on these principles, nine technical-performance tests were selected for further evaluation.

Step 2: Expert survey

A questionnaire was constructed with the selected tests and tgeb delivered to 30 experts twice, with a 15-day interval. The two surveys use the same test system, participants, evaluation criteria, and response format.

The purpose of the survey was to determine the appropriateness of each test for assessing the technical performance of the Saigon University men's volleyball team. Respondents would rate each test using three options: frequently used, occasionally used, or not used, corresponding to scores of 3, 2, and 0 points, respectively. The results are presented in Table 1.

Table 1: Survey results on the selected technical evaluation test for male athletes of the volleyball team at Saigon University, Vietnam

No.	Test	1st		2nd		Tests selected
		Total points	%	Total points	%	
1	Serve reception from zone 5 to the setter in zone 3 (times)	84	93.33	85	94.44	X
2	Topspin jump serves to the deep court (last 3 m) (times)	85	94.44	83	92.22	X
3	Float jump serves to the deep court (last 3 m) (times)	84	93.33	85	94.44	X
4	Outside attack from position 4 (times)	82	91.11	85	94.44	X
5	Right-side attack from position 2 (times)	84	93.33	86	95.56	X
6	Quick middle attack from position 3 (times)	84	93.33	82	91.11	X
7	Overhead set from zone 3 to zone 4 following reception from zone 5 (times)	88	97.78	85	94.44	X
8	Overhead set from zone 3 to zone 2 following reception from zone 5 (times)	84	93.33	85	94.44	X
9	Running outside spike from zone 4 across the full court (times)	72	80.00	76	84.44	

Based on the survey results, the study selected tests that achieved a total score of at least 90% across both rounds of expert consultation. As a result, eight technical-performance tests were chosen for assessing the male volleyball team of Saigon University, Vietnam, as follows: Serve reception from position 5 to position 3 (times), Topspin jump serves to the deep court (last 3 m) (times), Float jump serves to the deep court (last 3 m) (times), Outside attack from position 4 (times), Right-side attack from position (times), Quick middle attack from position 3 (times), Overhead set from zone 3 to zone 4 following reception from zone 5 (times), and Overhead set from zone 3 to zone 2 following reception from zone 5 (times).

Step 3: Test reliability assessment

Test reliability was examined using the pre-test method proposed by Le Van Lam and Pham Xuan Thanh (2007) [28], Nghiep Chi (2004) [29], and Do Vinh and Trinh Huu Loc (2010) [30]. The participants were tested on two occasions, separated by seven days under identical testing conditions. Paired correlation coefficients were calculated for each test between the first and second measurements. Tests with a correlation coefficient of $r \geq 0.80$ were considered sufficiently reliable. The results are presented in Table 2.

Table 2: Reliability coefficients of technical-performance tests for the male volleyball team of Saigon University, Vietnam

No.	Test	1st		2nd		Pearson coefficient	
		Mean	SD	Mean	SD	r	P
1	Serve reception from zone 5 to the setter in zone 3 (times)	6.85	0.67	6.86	0.68	0.94	<0.05
2	Topspin jump serves to the deep court (last 3 m) (times)	6.45	0.60	6.44	0.59	0.95	<0.05
3	Float jump serves to the deep court (last 3 m) (times)	6.65	0.59	6.65	0.58	0.99	<0.05
4	Outside attack from position 4 (times)	7.05	0.69	7.05	0.68	0.99	<0.05
5	Right-side attack from position 2 (times)	7.15	0.67	7.13	0.68	0.92	<0.05
6	Quick middle attack from position 3 (times)	7.25	0.72	7.24	0.69	0.87	<0.05
7	Overhead set from zone 3 to zone 4 following reception from zone 5 (times)	6.75	0.64	6.74	0.65	0.99	<0.05
8	Overhead set from zone 3 to zone 2 following reception from zone 5 (times)	6.75	0.64	6.74	0.65	0.91	<0.05

The data of Table 2 indicate that all technical-performance tests demonstrated reliability coefficients greater than 0.80 with $p < 0.05$. Therefore, all selected tests meet the reliability requirements for evaluating the technical performance of the study participants.

3.2. Evaluation of the development of the technical performance of the male volleyball team of Saigon University, Vietnam

To assess the athletes' current technical level and their development after one year of training, the study administered the selected technical-performance tests to the participants at two time points: before training and after one year of training. Their performances would be recorded, and their growth rates examined using a paired-sample t-test. The results are presented in Table 3.

Table 3: Changes in technical-performance test results of the male volleyball team of Saigon University at baseline and after one year of training

No.	Test	Initial		After one year of training				
		$\overline{X}$	S	$\overline{X}$	S	W%	t	P
1	Serve reception from zone 5 to the setter in zone 3 (times)	6.85	0.67	8.40	0.75	5.08	10.10	<0.001
2	Topspin jump serves to the deep court (last 3 m) (times)	6.45	0.60	8.30	0.80	6.27	14.09	<0.001
3	Float jump serves to the deep court (last 3 m) (times)	6.65	0.59	8.25	0.55	5.37	11.96	<0.001
4	Outside attack from position 4 (times)	7.05	0.69	8.70	0.73	5.24	12.57	<0.001
5	Right-side attack from position 2 (times)	7.15	0.67	8.75	0.72	5.03	10.51	<0.001
6	Quick middle attack from position 3 (times)	7.25	0.72	8.85	0.59	4.97	11.96	<0.001

7	Overhead set from zone 3 to zone 4 following reception from zone 5 (times)	6.75	0.64	8.60	0.60	6.03	12.33	<0.001
8	Overhead set from zone 3 to zone 2 following reception from zone 5 (times)	6.75	0.64	8.10	0.72	4.55	10.28	<0.001

Data in Table 3 indicate that, after one year of training, performance in all technical tests improved, with statistically significant increases ($p < 0.001$). The specific results are as follows:

- **Serve reception from Zone 5 to Zone 3 (times):** Performance improved after one year, with a mean growth rate of W% = 5.08%. The improvement was statistically significant ($t = 10.10 > t_{0.001} = 3.883$; $p < 0.001$)
- **Overhand topspin serves to the back 3-m zone (times):** A mean growth rate of W% = 6.27% was observed, with a highly significant difference ($t = 14.09 > 3.883$; $p < 0.001$).
- **Overhand float serve to the back 3-m zone (times):** Performance increased by W% = 5.37%, with statistical significance ($t = 11.96 > 3.883$; $p < 0.001$).
- **Outside spike from Zone 4 across the full court (times):** A mean increase of W% = 5.24% was recorded ($t = 12.57 > 3.883$; $p < 0.001$).
- **Outside spike from Zone 2 across the full court (times):** Results improved by W% = 5.03%, showing a significant difference ($t = 10.51 > 3.883$; $p < 0.001$).
- **Front quick spike from Zone 3 across the full court (times):** Performance increased by W% = 4.97%, with high statistical significance ($t = 11.96 > 3.883$; $p < 0.001$).
- **Overhand set from Zone 3 to Zone 4 following a serve reception from Zone 5 (times):** A mean growth rate of W% = 6.03% was observed ($t = 12.33 > 3.883$; $p < 0.001$).
- **Overhand set from Zone 3 to Zone 2 following a serve reception from Zone 5 (times):** Performance improved by W% = 4.55%, with a statistically significant difference ($t = 10.28 > 3.883$; $p < 0.001$).

Overall, after one year of training, all eight technical-performance tests showed significant improvement, with growth rates ranging from 4.55% to 6.27%. These results are consistent with the expected level of technical development for the male volleyball team of Saigon University.

4. Conclusion

The study identified eight technical-performance tests for evaluating male volleyball players of the Saigon University team, including: Serve reception from position 5 to position 3 (times), Topspin jump serves to the deep court (last 3 m) (times), Float jump serves to the deep court (last 3 m) (times), Outside attack from position 4 (times), Right-side attack from position (times), Quick middle attack from position 3 (times), Overhead

set from zone 3 to zone 4 following reception from zone 5 (times), and Overhead set from zone 3 to zone 2 following reception from zone 5 (times).

After one year of training, performance in all technical tests showed improvement, with growth rates ranging from 4.55% to 6.27%, and these improvements were statistically significant ($p < 0.001$).

Conflict of Interest Statement
The authors declare no conflicts of interest.

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