



THE EFFECTIVENESS OF TECHNICAL DEVELOPMENT EXERCISES FOR MALE BADMINTON ATHLETES AT SOC TRANG COMMUNITY COLLEGE, VIETNAM

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Abstract:

Background: Badminton is currently a well-developed sport in Vietnam. This sport requires continuous high-intensity movement. Thus, it demands significant physical effort from players to coordinate technical actions in each match. **Methods:** The research subjects consisted of 15 male students from the badminton team of Soc Trang Community College. They were trained with an experimental training program that included 15 exercises aimed at developing technical skills over 10 months. Training sessions were held three times a week, each lasting 120 minutes, with 60 minutes dedicated to focused technical practice. **Results:** The results showed that after the experimental training, the assessment of technical skills of the male athletes from the Soc Trang Community College badminton team indicated statistically significant differences at the probability threshold $P < 0.05$ with $t_{\text{calculated}} > t_{0.05} = 2.069$. The average growth rate was $\bar{W} = 26.42\%$. The test of high clears of 20 shots with the non-dominant hand showed the highest average growth rate of 30.46%, while the same test with the dominant hand had the lowest average growth rate of 21.74%. **Conclusion:** Fifteen professional technical development exercises have been selected for the male students of the Soc Trang Community College badminton team in Vietnam.

Keywords: badminton, technical skills, exercises, male athletes

1. Introduction

Badminton is an appealing sport because of its ease of play and training, so it is highly favored by many Vietnamese people in general and young people in particular. As a

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result, badminton has been incorporated into the physical education curriculum at Soc Trang Community College. This aims to encourage students to regularly engage in sports to enhance their health and promote a healthy lifestyle. As a non-cyclic sport driven by situational dynamics, badminton requires flexibility in movements, depending on the actions of teammates or opponents. In other words, badminton involves brief racket-shuttle contact but prolonged physical activity with rapid, variable movements requiring speed and power. Additionally, players need to master various techniques to accurately control the shuttlecock with the racket (Dam Tuan Khoi, 2012 [4]; Kerry Ann and Lieshout, 2002 [9]).

Like many other sports, training and competing in badminton significantly enhance the health of participants. For younger generations, badminton training helps develop and perfect the musculoskeletal and nervous systems, as well as other bodily systems like the respiratory and circulatory systems. This leads to the development of essential physical attributes such as strength, speed, endurance, and coordination. Furthermore, badminton training positively contributes to character development, fostering qualities such as morality, willpower, self-confidence, and determination. The benefits derived from badminton practice contribute positively to individuals' effectiveness in their work, studies, and personal endeavors, as well as to society (D Cabello Manrique and J J González – Badillo, 2003 [2]).

2. Material & Methods

2.1 Participants

The experiment was conducted at the Soc Trang Community College sports training ground. The research subjects were 15 male students aged 19 to 22, who were members of the college's badminton team. The experiment lasted for 10 months (from September 2022 to June 2023) and was divided into two training phases. After the first phase, students took a break to accommodate their first semester exams and the Tet holiday. The second phase began in February and continued until June with the following specific schedule.

- **Phase 1:** From September 2022 to January 2023,
- **Phase 2:** From February 2023 to June 2023
 - Monday: 5:30 PM to 7:00 PM,
 - Wednesday: 5:30 PM to 7:00 PM,
 - Friday: 5:30 PM to 7:00 PM.

2.2 Intervention

The selection of technical exercises for the male students of the Soc Trang Community College badminton team was carried out in three steps. First, the researcher compiled common exercises suggested by both domestic and international researchers, such as Le Hong Son (2006) [10], Le Thanh Sang (1994) [12], Huynh Trong Khai, Chau Vinh Huy (2005) [8], Dao Chi Thanh (2000) [3], Nguyen Tien Tien (2005) [15], Nguyen Hac Thuy

(1997) [14], Tran Van Vinh, Dao Chi Thanh (1998) [23], and Le Nguyet Nga, Nguyen Quang Vinh, Nguyen Thanh De (2016) [13].

Afterwards, the researcher consulted with 30 experts, including 4 administrators, 6 badminton coaches, and 20 physical education lecturers in Ho Chi Minh City. The opinions from both rounds of interviews were consistent ($P > 0.05$), indicating a high level of agreement among the experts on the selection of exercises. Finally, the study selected exercises that received at least 85% of votes marked as important in both rounds of interviews. As a result, 18 technical development exercises were selected, as presented in Table 1 below.

Table 1: Technical development exercises for male students of the Badminton team

Purposes	Exercises
Speed enhancement	Exercise 1: Lateral shuttle runs (20 rounds) – Rest time between sets: 3-5 minutes/team.
	Exercise 2: Quick reaction badminton drills (30 rounds x 2 sets) – Rest time between sets: 5-7 minutes/team.
	Exercise 3: Coordination drills: low forehand and backhand shots (30 seconds x 2 sets) – Rest time between sets: 5-7 minutes/team.
	Exercise 4: Rotational footwork: signal-based court rotation (30 rounds x 2 sets) – Rest time between sets: 5-7 minutes/team.
Strength enhancement	Exercise 5: Continuous 3-step backward jump smashes (15 times x 2 sets) – Rest time between sets: 5-7 minutes/team.
	Exercise 6: High forehand clears against the wall (20 seconds, 10-15 times x 3 sets) – Rest time between sets: 3-5 minutes/team.
	Exercise 7: High forehand clears with a practice partner (20 rounds x 2 sets) – Rest time between sets: 3-5 minutes/team.
	Exercise 8: On-the-spot rapid jump smashes (20 rounds x 2 sets) – Rest time between sets: 5-7 minutes/team.
Endurance enhancement	Exercise 9: Court movement: hitting corners (30 times x 2 sets) – Rest time between sets: 3-5 minutes/team.
	Exercise 10: Court movement: from center to corners (30 times x 2 sets) – Rest time between sets: 5-7 minutes/team.
	Exercise 11: Court movement: hitting 6 points on the court (3-4 times x 2 sets) – Rest time between sets: 3-5 minutes/team.
Agility enhancement	Exercise 12: Moving to the net posts and back along a straight line (10-15 shots x 2 sets) – Rest time between sets: 3-5 minutes/team.
	Exercise 13: Low net shots near the net (15-20 times x 2 sets) – Rest time between sets: 3-5 minutes/team.
	Exercise 14: Low net shots away from the net (15-20 times x 2 sets) – Rest time between sets: 3-5 minutes/team.
	Exercise 15: High net shots (15-20 times x 2 sets) – Rest time between sets: 5-7 minutes/team.

The total number of training sessions for the experimental subjects was meticulously organized. The physical training was strictly managed to eliminate external factors, ensuring the accurate measurement of the impact of the selected exercises on the

participants. The experimental program, supported by an experienced badminton coach, was carried out for ten months, from September 2022 to June 2023.

Table 2: Training plan

Period	Stage	Time	Content	Note
Preparation	Professional preparation	09/2022 - 01/2023	- Strengthen professional techniques, tactics, and psychology - Maintain physical and technical development through professional exercises	Lower the amount of competition Reduce general exercises to build competitive performance
	Specialization	02/2023 - 05/2023	- Increase the level of expertise and increase the level of competition with each other - Increase the difficulty of technical exercises - Regularly monitor the amount of exercise during exercise	Stabilize the movement volume Pay attention to the ability of recovery
Specialization and Assessment	Competition (assessment)	06/2023	Depend on the level of the competition schedule to prepare an appropriate training plan and mental health for coming competitions.	Do not use large amounts of exercise at this time
	Transition (In the summer period, few students participate in training, so the training focuses on maintenance)	6/2023 - 9/2023	Reduce intensity Learn from past tournaments (test) Use maintenance exercises	Maintain the amount of practice to prepare for a new phase of the next training cycle

The plan designed for the selected exercises ensures comprehensiveness, inheritance, accumulation, and science. This indicates that the development of physical and technical skills for the male badminton team members at Soc Trang Community College needs to ensure sequential, cumulative, and developmental progression. In particular, the training process follows a progressive cycle of familiarization – adaptation – temporary decline, ensuring the decent progress of athletes’ physical strength.

3. Assessments

The technical skills assessment for the research subjects included six tests. The assessments were conducted at both the initial stage and after the experimental training. The tests were determined through the following three steps:

- Step 1. Synthesis of literature regarding technical tests of badminton,

- Step 2. Expert consultation to selecting the six most suitable tests for male badminton athletes,
- Step 3. Reliability check of the chosen tests.

The technical tests were administered to the research subjects in two sessions, with a seven-day interval between the two sessions. The testing conditions were identical for both sessions. The correlation coefficient (Pearson's r) of the results from the two trials was then calculated. The results indicated that all of the six tests had an $r \geq 0.83$ and $P < 0.05$, ensuring the reliability of the test battery, which could be used to assess the participants' fitness accurately.

- **Test 1:** High Clears (20 shots with the non-dominant hand),
- **Test 2:** High Clears (20 shots with the dominant hand),
- **Test 3:** High Smashes (20 shots with the non-dominant hand),
- **Test 4:** High Smashes (20 shots with the dominant hand),
- **Test 5:** Drop Shots (20 straight shots into the corner),
- **Test 6:** Smashes (20 shots with the dominant hand).

The progress in the athletes' technical skills after 10 months of experiment is also essential as it indicates the effectiveness of the selected exercises. The progress is measured by \bar{X} , S , \bar{W} and average values of the performances before and after the experiment.

3.1 Data Analysis

The results of the study were collected before and after the experiment. The first time was one week right before the experiment, while the second time was one week after the experiment. All data were calculated with the assistance of SPSS 22.0. The outcomes include mean (M), standard deviation (SD), mean difference, growth rate, or Percent change, paired samples t-test, correlation coefficient (Pearson) Do Vinh, Trinh Huu Loc (2010) [5], Do Vinh, Huynh Trong Khai (2008) [6].

4. Results

To assess the technical skill improvement of the male badminton athletes at Soc Trang Community College after the experiment, the researcher conducted comparisons of the mean values of the performances before and after the experiment. This comparison was based on growth rates and the paired sample t-test, which evaluates the related mean values. The results of these analyses are presented in Table 3 below.

Table 3: Growth of technical skill performance of male badminton athletes at Soc Trang Community College after the experiment

No	Test items	Before experiment		After experiment		\bar{W}	t	P
		Mean	SD	Mean	SD			
1	Test 1	10.07	0.80	13.67	0.96	30.46	15.360	<0.05
2	Test 2	12.53	0.74	15,60	0.92	21.74	16.844	<0.05
3	Test 3	12.17	0.77	15,67	0.90	25.27	16.563	<0.05
4	Test 4	13.27	0.88	17.33	0.63	26.30	13.195	<0.05
5	Test 5	10.67	0.72	14.07	1.29	27.38	16.923	<0.05
6	Test 6	11.33	1.01	14.93	0.90	27.39	14.930	<0.05
	Physical fitness					26.42		

Table 3 shows the average values (\bar{X}) of all technical tests of the participants before and after the experiment; there is a statistically significant difference at the probability threshold $P < 0.05$ with $t_{\text{calculated}} > t^{0.05} = 2.145$. The technical growth in each test is shown in Figure 1.

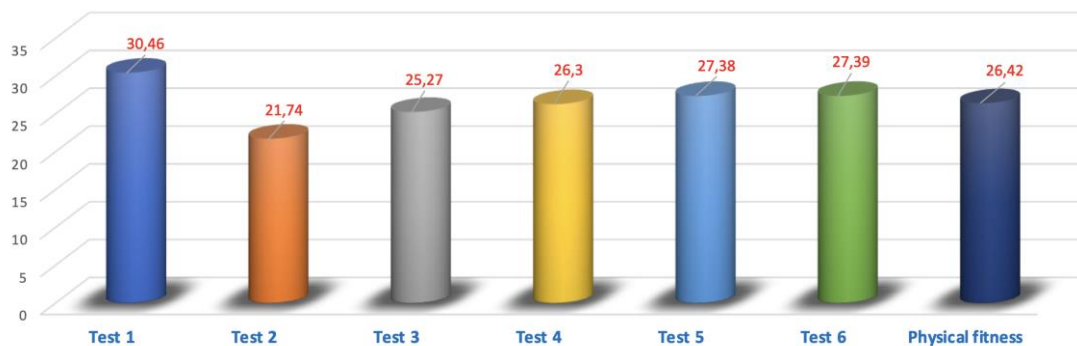


Figure 1: Growth rate of technical skills shown in each test after the experiment

The results show that the technical proficiency of male badminton athletes at Soc Trang Community College improved after the experiment. Their average growth rate was $\bar{W} = 26.42\%$, with the highest average growth rate $\bar{W} = 30.46\%$ (Test 1) and the lowest average growth rate $\bar{W} = 21.74\%$ (Test 2). This suggests that the selected exercises have a good impact on developing the technical skills of male badminton players.

To demonstrate the effectiveness of the exercises based on the results of the technical assessment tests, the researcher calculated the growth rates for each athlete after the experiment. The results are presented in Table 4.

Table 4. Growth rate of technical skills of each male badminton athlete of Soc Trang Community College across each test

No	Athletes	Test						\bar{W}
		Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	
1	No 1	30.77	34.48	26.67	28.57	15.38	34.48	28.39
2	No 2	33.33	30.77	25.00	25.00	37.04	32.26	30.57
3	No 3	31.58	22.22	22.22	20,69	26,09	24,00	24.47
4	No 4	24.00	22.22	26.67	25.00	30.77	19.35	24.67
5	No 5	28.57	22.22	15.38	22.22	28.57	33.33	25.05
6	No 6	33.33	15.38	26,09	24,00	33,33	26,09	26.37
7	No 7	28,57	22,22	40.00	28.57	30.77	18.18	28.05
8	No 8	24.00	14.29	24.00	22.22	26.09	26.09	22.78
9	No 9	36.36	20.69	22.22	20.69	28.57	33.33	26.98
10	No 10	30.77	26.67	37.50	32.26	22.22	26.67	29.35
11	No 11	24.00	14.29	25.00	35.29	20.69	28.57	24.64
12	No 12	33.33	20.69	22.22	25.00	26.09	24.00	25.22
13	No 13	33.33	14.29	24.00	26.67	18.18	26.09	23.76
14	No 14	36.36	20.69	15.38	25.00	24.00	33.33	25.79
15	No 15	28.57	25.00	26.67	33.33	42.86	25.00	30.24
\bar{W}		30.46	21.74	25.27	26.30	27.38	27.39	26.42

The data in Table 4 shows that after the experiment, the technical performance of the fifteen male students in the badminton team at Soc Trang Community College exhibited an average growth rate $\bar{W} = 26.42\%$. The highest rate was $\bar{W} = 30.57$ (Student No. 2), while the lowest was $\bar{W} = 22.78\%$ (Student No. 8).

Figure 2 illustrates the growth rates of technical proficiency among the male students in the badminton team at Soc Trang Community College after the experiment.

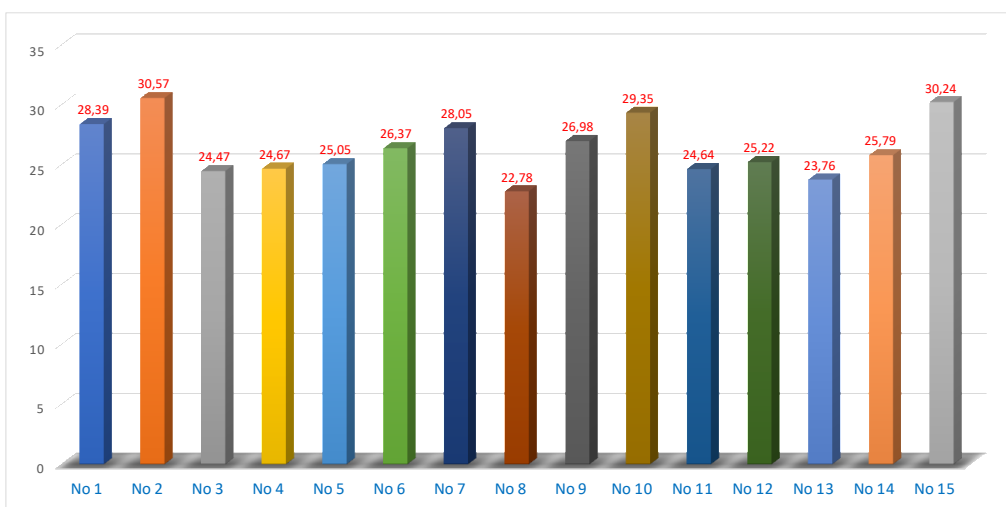


Figure 2: The growth rates of technical proficiency among the male badminton athletes at Soc Trang Community College after the experiment

5. Discussion

Through the synthesis and analysis of literature and interviews with badminton experts and coaches, the study has selected fifteen exercises for the technical development of male badminton athletes at Soc Trang Community College. These exercises represent an inheritance of the research work of Le Hong Son (2006) [10], Le Thanh Sang (1994) [12], Huynh Trong Khai, Chau Vinh Huy (2005) [8], Dao Chi Thanh (2000) [3], Nguyen Tien Tien (2005) [15], Nguyen Hac Thuy (1997) [14], Tran Van Vinh, Dao Chi Thanh (1998) [23], Dam Tuan Khoi (2012) [4], Pham Viet Thanh (2011) [18] and so on. In addition to literature synthesis and expert consultation, the researcher implemented observations at sports centers in the local area to determine the exercises that fit the area's facility.

The study brought the chosen exercises into the ten-month training program at Soc Trang Community College. It was ensured that during each training session, all of the physical fitness elements were fully developed, not only badminton techniques. The participants also gave positive feedback after each session, and they agreed that the exercises were suitable for them.

6. Conclusions

The study selected fifteen exercises for badminton technical development of male students at Soc Trang Community College. The 10-month experimental period recorded significant improvements in technical skills among the participants. The results indicate that the selected exercises were effective and suitable for improving the technical skills of male badminton athletes at Soc Trang Community College, Vietnam. The study also verified that the technical tests were reliable and valuable for assessing the progress and development of athletes.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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