



SELECTION OF TECHNICAL DEVELOPMENT EXERCISES FOR MALE BADMINTON ATHLETES AT TRA VINH UNIVERSITY

Pham Thai Phuong,
Tran Thi Thanh Huyenⁱ
School of Physical Education,
Tra Vinh University,
Vietnam

Abstract:

Badminton is assumed to be one of the fastest sports in the world, which is widely practiced and competed currently. In badminton, technique plays a decisive role in an athlete's success. This study aims to identify technical development exercises for male badminton athletes at Tra Vinh University. Common methods in sports research were employed, including literature synthesis, interviews, pedagogical assessments, and statistics with three phases of synthesizing the literature, interviewing, and assessing the effectiveness of the exercises. The study suggests 10 technical development exercises for male badminton athletes at Tra Vinh University.

Keywords: exercises, techniques, badminton, Tra Vinh University

1. Introduction

Badminton is considered one of the simplest sports appropriate for all subjects, genders, and ages. Technique levels in badminton rely on whether the player is general, amateur, or professional. Playing badminton has been beneficial to developing players' health and physical strengths. This is also a sport for international connection, signifying solidarity and friendship among countries.

Badminton requires the coordination of various movements in response to ever-changing situations due to players' interactions and other conditions. Therefore, in reality, badminton techniques are constantly improved and innovated to match the development trend of modern badminton. In modern badminton, physical strength and technique play a decisive role in the athlete's performance. In fact, the most important factor controlling the match is not simply a strong attack or defense, but the ability to control the shuttlecock. Proficient shuttlecock control will help maintain the advantage as it is crucial to badminton, requiring the mastery of a wide range of techniques.

ⁱ Correspondence: thanhhuyen@tvu.edu.vn

Although there has been an increasing number of students participating in badminton practice at Tra Vinh University, the recruitment of well-qualified athletes remains limited. This might result from the fact that most Tra Vinh University student players are amateurs with a basic level of technical skills, physical strengths and tactics, and have not been properly trained. Currently, Tra Vinh University's badminton team only focuses on men's singles and men's doubles because female athletes are not qualified to compete in singles and doubles, and can only compete in men's and women's doubles matches. In order to train male badminton athletes qualified to compete in tournaments inside, outside the province and nationwide, coaches need to evaluate the ability of each athlete and compensate for appropriate exercises to improve the physical fitness and technical skills of the entire team.

Recognizing the importance of this issue, the researchers report on the study: *"Selection of technical development exercises for male badminton athletes at Tra Vinh University"*

This study aims to suggest technical development exercises for male athletes in the Tra Vinh University's badminton team.

2. Materials and methods

2.1 Methods

To address the aforementioned research aim, the study employed the following methods:

- Literature synthesis: to synthesize the literature on badminton techniques to establish the theoretical framework for the current research, determine its purpose and objectives, and discuss the research results.
- Interview based on a questionnaire: to consult with experts, specialists, lecturers, and managers who have experience in badminton coaching in Tra Vinh and lecturers in Ho Chi Minh City University of Physical Education and Sports and Ho Chi Minh City University of Sports. Results of the interview served to suggest technical development exercises for male badminton athletes at Tra Vinh University.
- Pedagogical assessment: to validate technical tests for male badminton athletes at Tra Vinh University.
- Statistical analysis: to process and analyze data obtained in the research with the support of SPSS 22.0 software.

2.2 Participants

- Participants included 10 male badminton athletes from Tra Vinh University.
- Interviewees included 32 experts, coaches, lecturers, and managerial staff experienced in coaching and teaching badminton.

3. Results

3.1 Selection of several technical development exercises for the male badminton athletes of Tra Vinh University's badminton team

The selection of technical development exercises was conducted in two steps:

- Step 1: Synthesizing technical development exercises commonly used or recommended by domestic and international authors.
- Step 2: Interviewing coaches, experts, teachers, and managerial staff.

A. Synthesis of the technical development exercises commonly used or recommended by domestic and international authors

To opt for the technical development exercises for Tra Vinh University's male badminton athletes, a list of typical technical development exercises documented by authors in the badminton technical development domain should be systematized.

Below are previous works in the field: Nguyen and Nguyen (2000), Gunalan (2001), Chau (2007), Nguyen (2005), Banh and Hau (2000), Le (2006), The Sports Committee (1999), Tran and Dao (1998), Dam (2012), Le et al. (2016), Mai (2007), and Pham (2023).

The exercise selection process adhered to the following principles:

- Shortlisting exercises commonly used by authors (50 percent and above).
- Shortlisting less popular exercises yet compatible with the badminton attributes and the local practice.

On the basis of investigating documents and published works relating to the research problems and the two mentioned principles, this paper went for a set of 25 technical development exercises.

B. Consultation with experts and specialists to determine technical development exercises for the male badminton athletes of Tra Vinh University's badminton team

In a precise, impartial, and scientific manner, in this paper, the interview was conducted in two rounds with an identical testing system and assessment technique. There was a month between the two interviews. The interviewees were asked to indicate how frequently they used the exercises:

- Regularly use: 2 points,
- Barely use: 1 point,
- Never use: 0 point.

There were 62 responses to the interviews in total: 11 responses came from coaches (18%), 13 from specialized lecturers (22%), 31 from specialized teachers (52%), and 5 from specialized managerial staff (8%). To examine the homogeneity of variance, a comparison was made using the Chi-square test (Table 1).

Table 1: Comparison of the interviews' results of the technical development exercises for Tra Vinh University's male badminton athletes

No.	Factors, Test	1st Interview (n = 32)		2nd Interview (n = 30)		χ^2	P
		Σ points	Rate %	Σ points	Rate %		
1	Low forehand serve near the net	60	91	60	94	0.02	> 0.05
2	Low forehand serve far from the net	39	59	40	63	0.02	> 0.05
3	Backhand serve near the net	57	86	59	92	0.02	> 0.05
4	High backhand shot combined with low shot to the left	47	71	39	61	0.02	> 0.05
5	Movement to retrieve shuttlecock at 6 basic positions on the court	36	55	44	69	0.01	> 0.05
6	Take a single step toward the net to execute a forehand shot.	55	83	53	83	0.02	> 0.05
7	Take a single step toward the net and execute a backhand shot.	44	67	40	63	0.01	> 0.05
8	Take a single step backward and execute a forehand shot.	34	52	36	56	0.00	> 0.05
9	High deep forehand serve	57	86	57	89	0.02	> 0.05
10	Take two steps toward the net and execute a right-side shot.	44	67	41	64	0.01	> 0.05
11	Take two steps toward the net and execute a left-side shot.	47	71	44	69	0.02	> 0.05
12	Take two steps toward the baseline and execute a left-side shot	39	59	33	52	0.02	> 0.05
13	Take two steps toward the baseline and execute a right-side shot	37	56	42	66	0.02	> 0.05
14	Straight high forehand shot	53	80	53	83	0.02	> 0.05
15	Diagonal high forehand shot	43	65	36	56	0.01	> 0.05
16	Straight overhead shot	43	65	40	63	0.02	> 0.05
17	Diagonal overhead shot	59	89	54	84	0.02	> 0.05
18	Diagonal high backhand shot	43	65	33	52	0.02	> 0.05
19	High forehand shot from one point to two points	58	88	57	89	0.01	> 0.05
20	High forehand shot from two points to one point	42	64	35	55	0.01	> 0.05
21	Straight high backhand shot	55	83	74	16	0.01	> 0.05
22	Straight forehand smash	34	52	45	70	0.00	> 0.05
23	Diagonal forehand smash	35	53	39	61	0.01	> 0.05
24	Forehand net drop near the net	60	91	60	94	0.02	> 0.05
25	Backhand net drop near the net	63	95	57	89	0.02	> 0.05

Table 1 revealed that the results of the two interviews on the exercises all had $\chi^2_{\text{tính}} < \chi^2_{\text{bảng}} (= 3.84)$ at the probability threshold of $P > 0.05$, meaning that the differences between the observed average values are not statistically significant with $P > 0.05$. Therefore, the interview results from experts, coaches, and lecturers showed a high degree of consistency in their responses.

The interview results led to the selection of exercises that scored over 75% in both interviews (above 52 points for the first interview and above 52 points for the second interview). As a result, 10 technical development exercises for male athletes of Tra Vinh University's badminton team were sorted out as follows:

- Low forehand serve near the net,

- Backhand serve near the net,
- Take a single step toward the net to execute a forehand shot,
- High deep forehand serve,
- Straight high forehand shot,
- Diagonal overhead shot,
- High forehand shot from one point to two points,
- Straight high backhand shot,
- Forehand net drop near the net,
- Backhand net drop near the net.

3.2 Assessments on the effectiveness of technical development activities for male athletes of the Tra Vinh University's badminton team

3.2.1 Organization of the experiment

The experiment was planned to be carried out in 5 months (from October 2022 to March 2023) with two tests: the pre-test was to determine the technical and skill level of the research subjects, and the post-test was conducted after 5 months of experiment to validate the effectiveness of applying the exercises as well as those chosen after the experiment.

3.2.2 Experimental purpose

The experiment aims to demonstrate and validate the effectiveness and feasibility of applying the chosen technical development exercises for male athletes of the badminton team at Tra Vinh University.

3.2.3 Experimental content

Applying technical development exercises for male athletes of Tra Vinh University's badminton team.

3.2.4 Experimental location

Tra Vinh University (126 Nguyen Thien Thanh, Hamlet 4, Ward 5, Tra Vinh City).

3.2.5 Experimental group

10 male athletes of the badminton team of Tra Vinh University.

3.2.6 Experimental period

5 months (October 31, 2022 – March 31, 2023) (with a 2-week break for the Lunar New Year holiday). The training time was 3 sessions per week in which each session lasted for 120 minutes (2 hours). The total number of lesson plans for the experimental group in 5 months of the pedagogical experiment from October 2022 to March 2023, covering 17 weeks, was 51 lesson plans (Table 2).

Table 2: Experimental Process

Exercise	1	2	3	4	5	6	7	8	9	10
-----------------	---	---	---	---	---	---	---	---	---	----

Pham Thai Phuong, Tran Thi Thanh Huyen
 PHYSICAL STATUS OF MALE ATHLETES OF THE SAIGON UNIVERSITY BADMINTON TEAM, VIETNAM

Week / Lesson plan											
Week 1	1	x					x	x		x	
	2		x		x				x		x
	3			x		x		x		x	
Week 2	4	x					x	x		x	
	5		x		x				x		x
	6			x		x		x		x	
Week 3	7	x					x	x		x	
	8		x		x				x		x
	9			x		x		x		x	
Week 4	10	x					x	x			x
	11		x		x				x		x
	12			x		x		x		x	
Week 5	13	x				x	x	x			
	14		x		x				x		x
	15			x		x		x		x	
Week 6	16		x	x					x	x	
	17	x			x	x					x
	18		x				x	x		x	
Week 7	19		x	x					x	x	
	20	x			x	x					x
	21		x				x	x		x	
Week 8	22		x	x					x	x	
	23	x			x	x					x
	24		x				x	x		x	
Week 9	25		x	x					x	x	
	26	x			x	x					x
	27		x				x	x		x	
Week 10	28		x	x					x	x	
	29	x			x	x					x
	30		x				x	x		x	
Week 11	31		x	x					x	x	
	32	x			x	x					x
	33		x				x	x		x	
Week 12	34			x			x			x	x
	35				x	x		x	x		
	36	x	x					x			x
Week 13	37			x			x		x	x	
	38				x	x		x	x		
	39	x	x							x	x
Week 14	40	x		x			x			x	
	41				x	x		x	x		
	42	x	x				x				x
Week 15	43			x			x			x	
	44				x	x		x	x		
	45	x	x				x				x
Week 16	46	x		x			x			x	
	47				x	x		x	x		
	48	x	x				x				x
Week 17	49	x		x			x			x	
	50				x	x		x	x		
	51	x	x				x				x

After the experimental period, this study conducted a performance evaluation of the technical assessment tests for the male athletes of Tra Vinh University's badminton team.

Based on the collected data, the study compared the average performance values of the technical assessment tests of the experimental group before and after the experiment through the growth rate index presented in Table 3.

To assess the effectiveness of the selected exercises, the performances of 10 male athletes were evaluated using the following tests:

- Test 1: Drop shot straight into the box, 20 shots (shots),
- Test 2: Cross-court slice into the box, 20 shots (shots),
- Test 3: Clear shot straight into the box, 20 shots (shots),
- Test 4: Smash shot straight into the box, 20 shots (shots),
- Test 5: Backhand serve into the box, 20 shots (shots),
- Test 6: Forehand serve into the box, 20 shots (shots).

Table 3: The growth rate of the technical assessment tests for the male athletes of Tra Vinh University's badminton team after the experiment

No.	Test	\bar{X}_{TN}	S	\bar{X}_{STN}	S	\bar{W}	t	P	
1	Drop shot straight into the box, 20 shots	11.60	1.07	16.20	0.79	33.28	10.17	<0.05	
2	Cross-court slice into the box, 20 shots	11.40	1.35	16.10	0.74	34.61	10.48	<0.05	
3	Clear shot straight into the box, 20 shots	12.80	1.03	16.80	0.63	27.21	12.00	<0.05	
4	Smash shot straight into the box, 20 shots	9.70	1.45	15.30	0.82	45.62	9.33	<0.05	
5	Backhand serve into the box, 20 shots	13.20	0.79	16.20	0.79	20.42	7.12	<0.05	
6	Forehand serve into the box, 20 shots	12.00	1.05	16.50	0.85	31.74	10.52	<0.05	
	\bar{W}						32.15		

Df = n - 1 = 9, $t_{05} = 2.262$

As can be seen in Table 3, after the experiment, the average values (\bar{X}) of all technical assessment tests for the male badminton athletes at Tra Vinh University had statistically significant differences with $P < 0.05$ since all obtained $t_{\text{calculated}} > t_{05} = 2.262$.

3.2.7 Conclusion

The above analysis indicated that the performances of all technical assessment tests for the male badminton athletes at Tra Vinh University were improved. This improvement was statistically significant with $P < 0.05$ due to holding $t_{\text{calculated}} > t_{05} = 2.262$. The average growth rate was $\bar{W} = 32.15\%$, with the highest average growth rate in the single rope skipping test at $\bar{W} = 45.62\%$ and the lowest in the standing high jump test at $\bar{W} = 20.42\%$. In other words, the performance after applying the exercises was better and more effective than before the experiment. These results revealed that the exercises implemented in the experiment had advanced the techniques of the male badminton athletes at Tra Vinh University.

4. Conclusions

Based on the synthesized documents and the interviews, the study pointed out 10 technical development exercises for the male badminton athletes at Tra Vinh University including:

- Low forehand serve near the net,
- Backhand serve near the net,
- Take a single step toward the net to execute a forehand shot,
- High deep forehand serve,
- Straight high forehand shot,
- Diagonal overhead shot,
- High forehand shot from one point to two points,
- Straight high backhand shot,
- Forehand net drop near the net,
- Backhand net drop near the net,

The results of applying these 10 exercises to the experiment illuminated the advancement in the performances of the technical assessment tests for the male badminton athletes at Tra Vinh University with statistical significance at $P < 0.05$.

Conflict of Interest Statement

The authors declare no conflicts of interest.

About the Authors

Pham Thai Phuong completed his Master's degree and has been a physical education lecturer at the School of Physical Education, Tra Vinh University, Vietnam.

Tran Thi Thanh Huyen has completed his Master's degree and has been a physical education lecturer at the School of Physical Education, Tra Vinh University, Vietnam.

References

- Banh, M. L., & Hau, C. K. (2000). *Cầu lông (Lê Đức Chương dịch)* [Badminton (translated by D. C. Le)]. Sports Publishing House, Hanoi.
- Chau, V. H. (2007). *Nghiên cứu sự phát triển thể lực của vận động viên nam cầu lông trẻ từ 16 – 18 tuổi tại thành phố Hồ Chí Minh sau một năm tập luyện* [An investigation into the physical development of young badminton athletes aged 16-18 in Ho Chi Minh City] [Master's thesis].
- Chau, V. H., & Tran, Q. D. (2021). *Đề cương ôn thi Cao học Lý luận và Phương pháp giáo dục thể chất* [Learning material on sports methodology].
- Dam, T. K. (2012). *Xây dựng hệ thống tiêu chuẩn đánh giá trình độ tập luyện của vận động viên cầu lông cấp cao* [Building an assessment system on the training level of senior badminton athletes] [Doctoral thesis]. Vietnam Sports Science Institute.
- Department of Badminton and Tennis (2001). *Huấn luyện ban đầu cho vận động viên cầu lông Trung Quốc* [Initial training for Chinese badminton athletes] [References for coaches], 15–22. Sports Committee.

- Do, V., & Huynh, T. K. (2010). *Thống kê học trong TDTT* [Statistics for Sports]. Sports Publishing House, Hanoi.
- Do, V., & Trinh, H. L. (2010). *Đo lường thể thao* [Sports measurement]. Sports Publishing House, Hanoi.
- Do, V., Nguyen, Q. V., & Nguyen, T. D. (2016). *Giáo trình Lý thuyết và phương pháp nghiên cứu khoa học thể dục thể thao* [Theories and Methodologies in Sports Science]. VNUHCM Press.
- Gunalan, D.P. (2001). *Tài liệu hướng dẫn huấn luyện viên cầu lông 2001, bài giảng lớp bồi dưỡng HLV Cầu lông* [Training material for the course on badminton coaching 2001]. Da Nang National Sports Training Center.
- Le, H. S. (2002). Bước đầu nghiên cứu ứng dụng một số test trong tuyển chọn VĐV Cầu lông nam lứa tuổi 12-13 [Initial research on the application of tests in recruiting male badminton athletes aged 12-13]. *Journal of Sports Sciences* 5(273).
- Le, N. N., Nguyen Q. V., & Nguyen T. D. (2016). *Khoa học tuyển chọn tài năng thể thao* [Sport talent recruitment science]. VNUHCM Press.
- Le, H. S. (2006). *Nghiên cứu sự phát triển thể lực của vận động viên nam cầu lông trẻ từ 16 – 18 tuổi tại thành phố Hồ Chí Minh sau một năm tập luyện* [Research on physical development of the young male badminton athletes aged 16-18 in Ho Chi Minh City after one year of training] [Doctoral thesis in Education]. Vietnam Sports Science Institute.
- Lo, V. C. (2015). *Lựa Chọn Bài Tập Nâng Cao Hiệu Quả Kỹ Thuật Bật Nhảy Đập Cầu Cho Đội Tuyển Nữ Cầu Lông Trường THPT Gia Lộc – Hải Dương* [Selection of exercises to improve the effectiveness of jump smash techniques for the female badminton athletes at Gia Loc high school in Hai Duong] [Master's thesis in Education].
- Ly, G. H. (2019). *Luận văn thạc sĩ Giáo dục học* [Master's thesis in Education]. Ho Chi Minh City University of Physical Education and Sports.
- Mai, T. T. (2007). *Luận văn thạc sĩ Giáo dục học* [Master's thesis in Education]. Ho Chi Minh City University of Physical Education and Sports.
- Nguyen, H. T. (1997). *Huấn luyện kỹ thuật cầu lông hiện đại* [Coaching modern badminton techniques]. Sports Publishing House, Hanoi.
- Nguyen, H. T., & Nguyen, Q. B. (2000). *Huấn luyện thể lực cho vận động viên cầu lông* [Physical training for badminton athletes]. Sports Publishing House, Hanoi.
- Nguyen, T. H. (2005). *Kế hoạch huấn luyện đội tuyển Cầu lông Việt Nam 2005* [Training scheme for the Vietnam national badminton team 2005].
- Nguyen, T. L. (2013). *Nghiên cứu xây dựng hệ thống bài tập phát triển năng lực di chuyển cho nam SV chuyên sâu cầu lông khoa GDTC Trường Đại học TDTT TP. HCM* [Building an exercise system developing movement capacity for male badminton students at Department of Physical Education, Ho Chi Minh City University of Physical Education and Sports] [Master's thesis].
- Nguyen, T., & Pham, D. T. (2000). *Lý luận và phương pháp thể dục thể thao* [Sport Methodology]. Sports Publishing House, Hanoi.
- Nguyen, V. T. (2012). *Lý luận và Phương pháp huấn luyện thể thao* [Sport Methodology]. Sport Publishing House.

- Nguyen, V. T. (2012). *Lý luận và Phương pháp huấn luyện thể thao hiện đại* [Modern Sports Methodology]. Sports Publishing House, Hanoi.
- Nguyen, X. B. (2014). *Đề đánh giá thể lực cho VĐV chuyên sâu cầu lông* [An in-depth analysis of physical strengths of badminton athletes]. Sports Publishing House, Hanoi.
- Nguyen. H. M., To T. B. T., & Phan T. V. (2022). *Giáo trình Sinh lý học Thể dục Thể thao* [Learning material in sports physiology]. Ho Chi Minh City Sports Publishing House.
- Pham, T. P. (2023). *Luận văn thạc sĩ Giáo dục học* [Master's thesis in Education]. Ho Chi Minh City University of Physical Education and Sports.
- Puma (1999). *Huấn luyện cầu lông* [Badminton coaching] (*Teaching material for the course for badminton coaches*).
- Tran, V. V., & Dao, C. T. (1998). *Cầu Lông* [Badminton]. Sports Publishing House, Hanoi.
- Tran, V. V., & Dao, C. T. (2003). *Hệ thống bài tập huấn luyện cầu lông* [Exercise system for badminton training]. Sports Publishing House, Hanoi.

Creative Commons licensing terms

Authors will retain the copyright of their published articles agreeing that a Creative Commons Attribution 4.0 International License (CC BY 4.0) terms will be applied to their work. Under the terms of this license, no permission is required from the author(s) or publisher for members of the community to copy, distribute, transmit or adapt the article content, providing a proper, prominent and unambiguous attribution to the authors in a manner that makes clear that the materials are being reused under permission of a Creative Commons License. Views, opinions and conclusions expressed in this research article are views, opinions and conclusions of the author(s). Open Access Publishing Group and European Journal of Physical Education and Sport Science shall not be responsible or answerable for any loss, damage or liability caused in relation to/arising out of conflict of interests, copyright violations and inappropriate or inaccurate use of any kind content related or integrated on the research work. All the published works are meeting the Open Access Publishing requirements and can be freely accessed, shared, modified, distributed and used in educational, commercial and non-commercial purposes under a [Creative Commons attribution 4.0 International License \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).