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SELECTING PHYSICAL DEVELOPMENT EXERCISES FOR FEMALE STUDENTS ENROLLED IN THE BADMINTON ELECTIVE COURSE AT HO CHI MINH CITY UNIVERSITY OF INDUSTRY AND TRADE

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Abstract:
Using traditional research methods, 18 exercises were selected for application in the Badminton elective course. Initial practical application has demonstrated high efficiency in developing the physical fitness of female students enrolled in the Badminton elective at Ho Chi Minh City University of Industry and Trade.

Keywords: Badminton; students; physical development; Ho Chi Minh City University of Industry and Trade

1. Introduction

In universities and colleges, Badminton is a favorite sport among many students for practice and competition. With simple equipment and accessible courts, Badminton is suitable for students of all ages and genders. The inclusion of Badminton in the curriculum at Ho Chi Minh City University of Industry and Trade has attracted many students, especially female students, to enroll in elective modules, extracurricular activities, and amateur Badminton tournaments.

Through observation, professional consultation, and practical teaching experience, it was noted that the current use of content, methods, and tools for physical development for students in the Badminton elective, particularly for female students, remains quite simplistic and monotonous. This fails to generate interest or promote proactive and self-disciplined practice, leading to suboptimal results.

Therefore, improving and diversifying both the forms and content of training is essential. Based on this reality, selecting physical development exercises for female students in the Badminton elective is a matter of great urgency.

2. Research Methods

The study utilized the following methods: Analysis and synthesis of documents; Interview method; Pedagogical testing method; Pedagogical experimentation method; Statistical mathematical methods.

Research subjects: 80 female students from the 15th cohort currently enrolled in the Badminton elective at Ho Chi Minh City University of Industry and Trade.

3. Research Results and Discussion

3.1 Selecting physical development exercises for female students in the Badminton elective at Ho Chi Minh City University of Industry and Trade

Based on the synthesis and analysis of relevant documents, we initially selected 37 physical development exercises for female students in the Badminton elective. To choose exercises compatible with the facility conditions and the physical characteristics of the students, we conducted interviews with experts and Physical Education lecturers. As a result, 18 physical development exercises were selected for female students during the Badminton elective course at Ho Chi Minh City University of Industry and Trade.

Speed development exercise group (5 exercises)	
Exercise 1: Shuttlecock pickup movement	Volume: 30s x 2 sets, maximum intensity, rest between sets: 1 minute
Exercise 2: Combined forehand and backhand low-hand swings and forehand and backhand high-hand swings 30s x 2 sets	Volume: 30s x 2 sets, maximum intensity, rest between sets: 1 minute
Exercise 3: High-knee running in place for 5 - 10 seconds, with a signal for a 15m sprint	Volume: 2 reps x 15m, maximum intensity, rest time between reps from 1 minute.
Exercise 4: Singles court lateral movement	Volume: 5 reps x 2 sets, maximum intensity, rest between sets: 2 minutes.
Exercise 5: Forward and backward movement	Volume: 5 reps x 2 sets, maximum intensity, rest between sets: 2 minutes
Group of strength development exercises (5 exercises)	
Exercise 6: Prone push-ups	Volume: 6 reps x 2 sets, rest between sets 30s – 1 minute, active rest, maximum intensity
Exercise 7: Long-distance clears with a feeder	Volume: Perform 5 - 10 reps per set x 2 sets, rest between sets 2 - 3 minutes, active rest, maximum intensity
Exercise 8: Three-step backward movement with continuous jumping clear	Volume: 5 reps (returning to the starting position counts as 1 rep) x 2 sets, rest time between sets: 2 - 3 minutes, active rest, maximum intensity

Exercise 9: Alternating split jump lunges	Volume: 8 reps x 2 sets, rest between sets 30s, maximum intensity
Exercise 10: Continuous alternating leg movement.	Volume: 15s x 2 sets, rest between sets is 30s, intensity at 80% effort
Group of endurance development exercises (4 exercises)	
Exercise 11: High-long clears followed by circular movement around the court	Volume: Perform hitting and moving for 3 minutes / 1 set x 2 sets, rest time between: 3 minutes, active rest, performed at 75 – 80% intensity
Exercise 12: 6-point court movement	Volume: Perform 2 reps / 1 set x 2 sets, rest time between: 2-3 minutes, active rest, performed at 75 – 80% intensity
Exercise 13: Forward and backward movement with shuttlecock throwing.	Volume: Perform 5 reps / 1 set x 2 sets, rest time between: 2-3 minutes, active rest, performed at 70 – 80% intensity
Exercise 14: Movement to the 2 back corners for high-long clears	Volume: Perform for 1 minute x 2 sets, rest time between: 2-3 minutes, active rest, performed at 70 – 80% intensity
Group of motor coordination development exercises (4 exercises)	
Exercise 15: Movement for net drops at 2 corners, retreat for high-long clears with a feeder	Volume: Perform 10 shuttlecocks per set x 2 sets, rest time between: 2-3 minutes, active rest, performed at 70 – 80% intensity
Exercise 16: Multi-point court movement hitting with a feeder	Volume: Perform 1 minute per set x 2 sets, rest time between: 2-3 minutes, active rest, performed at 80 – 85% intensity
Exercise 17: Movement to 2 front corners for 5 straight net drops	Volume: Perform 5 shuttlecocks per set x 2 sets, rest time between: 2-3 minutes, active rest, performed at 70 – 80% intensity
Exercise 18: Combined lateral movement and defense with a feeder	Volume: Perform 5 shuttlecocks per set x 2 sets, rest time between: 2-3 minutes, active rest, performed at 70 – 80% intensity

3.2 Application and evaluation of the effectiveness of physical development exercises for female students in the Badminton elective at Ho Chi Minh City University of Industry and Trade

3.2.1 Application of selected exercises

- **Experimental method:** Parallel pedagogical experimentation.
- **Experimental subjects:** Consist of 80 female students of the 15th cohort currently enrolled in the Badminton elective at the University. The subjects were divided into two groups:
  - **Group I:** Control Group (CG), students practicing according to the University's standard elective Physical Education program, consisting of 40 female students.
  - **Group II:** Experimental Group (EG), students also practicing according to the University's standard Physical Education program, but combined with the

application of the newly developed exercises (as mentioned above), consisting of 40 female students.

- **Experimental duration:** Semester I of the 2024 academic year, 30 periods per semester, 2 periods per week. Thus, the plan was applied for 08 weeks, with each training session lasting from 30 – 45 minutes.

The experimental progression of exercises for students in the Badminton elective at Ho Chi Minh City University of Industry and Trade is presented in Table 1.

Table 1: Experimental progression of exercises for female students in the Badminton elective at Ho Chi Minh City University of Industry and Trade

No.	Lesson plan / Content	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Exercise 1	Theory		+			+		Midterm Exam				+			
2	Exercise 2			+		+				+			+		+	
3	Exercise 3		+		+			+				+		+		+
4	Exercise 4		+		+		+									
5	Exercise 5		+	+	+	+	+				+			+		
6	Exercise 6						+	+		+	+	+	+		+	
7	Exercise 7		+			+				+		+			+	
8	Exercise 8			+			+				+		+			
9	Exercise 9				+			+				+		+		
10	Exercise 10		+		+		+			+		+				+
11	Exercise 11			+		+		+			+		+		+	
12	Exercise 12				+			+			+			+		
13	Exercise 13			+		+		+				+				+
14	Exercise 14		+			+				+						
15	Exercise 15												+		+	+
16	Exercise 16						+			+				+		
17	Exercise 17			+				+							+	
18	Exercise 18		+		+	+				+						

2.2. Analysis of experimental results

Before the experimental process, we conducted the first evaluation of both the Control Group and the Experimental Group using 6 test contents for assessing student physical fitness, as prescribed in Decision No. 53/2008/QD-BGDDT dated September 18th, 2008, by the Ministry of Education and Training [1].

The results are presented in Table 2.

Table 2: Pre-experimental test results of physical fitness indicators for female students in the control and experimental groups

Test	Control group (n = 40)		Experimental group (n = 40)		Comparison	
	$\overline{x}$	± ◎	$\overline{x}$	± ◎	t	P
Dominant hand grip strength (kg)	28.11	1.92	29.01	1.63	0.103	**>0.05**
30m Sprint - High Start (s)	6.08	0.22	6.18	0.25	0.161	**>0.05**
Standing broad jump (cm)	153.5	10.32	154.24	7.55	0.177	**>0.05**
Lie-down sit-ups in 30s (sl)	13.04	1.3	14.01	2.12	0.258	**>0.05**
5-minute run at own pace (m)	758.06	44.12	758.01	65.14	0.056	**>0.05**
4x10m Shuttle run (s)	14.04	0.31	14.88	0.41	0.087	**>0.05**

Table 2 shows that there were no statistically significant differences (P > 0.05) in the testing criteria and physical fitness results between the experimental group and the control group. The physical fitness levels of the 15th-cohort female students currently enrolled in the Badminton elective at Ho Chi Minh City University of Industry and Trade were equivalent in the pre-experimental stage.

In order to assess the physical development of the experimental subjects after the period of implementing the training program, we continued to conduct tests on both the Experimental and Control groups using the selected physical fitness tests. The testing was conducted after the completion of the Physical Education course program.

The test results are shown in Table 3.

Table 3: Post-experimental test results between the control and experimental groups after the conclusion of Semester I

Test	Control group (n = 40)		Experimental group (n = 40)		Comparison	
	$\overline{x}$	± ◎	$\overline{x}$	± ◎	t	P
Dominant hand grip strength (kg)	28.45	1.05	31.12	1.14	5,122	<0.05
30m Sprint - High Start (s)	6.11	0.15	5.6	0.12	2,651	<0.05
Standing broad jump (cm)	154.9	5.19	159.1	7.45	5,247	<0.05
Lie-down sit-ups in 30s (sl)	14	1.47	15.02	1.28	7,312	<0.05
5-minute run at own pace (m)	759.35	31.33	763.02	63.6	4,646	<0.05
4x10m Shuttle run (s)	14.06	0.23	13.65	0.29	7,573	<0.05

Table 3 shows that, in all contents, the physical fitness test results of the experimental group were significantly higher than those of the control group (P < 0.05). In other words, the selected physical exercises initially demonstrated higher effectiveness compared to the old exercises currently being used for teaching at the University.

With the aim of clarifying the effectiveness of the selected exercises, we conducted a comparison of the results of the experimental and control groups before and after the experiment.

The results obtained are presented in Table 4.

Table 4: Comparison of the growth rate between the control and experimental groups of female students in the badminton elective at Ho Chi Minh City University of Industry and Trade after the experimental period

Group	Test	Pre-Experiment		Post-Experiment		Comparison		
		$\overline{x}$	± σ	$\overline{x}$	± σ	W	t	P
Control group (n=40)	Dominant hand grip strength (kg)	28.11	1.92	28.45	1.05	**0.92**	**0.778**	**>0.05**
	30m Sprint - High Start (s)	6.08	0.22	6.11	0.15	**2.04**	**1,568**	**>0.05**
	Standing broad jump (cm)	153.5	10.32	154.9	5.19	3.11	2,103	<0.05
	Lie-down sit-ups in 30s (sl)	13.04	1.3	14	1.47	6.72	2,725	<0.05
	5-minute run at own pace (m)	758.06	44.12	759.35	31.33	3.54	2,579	<0.05
	4x10m Shuttle run (s)	14.04	0.31	14.06	0.23	1.51	2,133	<0.05
Experimental group (n=40)	Dominant hand grip strength (kg)	29.01	1.63	31.12	1.14	5.45	5,324	<0.05
	30m Sprint - High Start (s)	6.18	0.25	5.6	0.12	4.83	3,261	<0.05
	Standing broad jump (cm)	154.24	7.55	159.1	7.45	8.19	6,535	<0.05
	Lie-down sit-ups in 30s (sl)	14.01	2.12	15.02	1.28	22.36	8,173	<0.05
	5-minute run at own pace (m)	758.01	65.14	763.02	63.6	11.49	5,346	<0.05
	4x10m Shuttle run (s)	14.88	0.41	13.65	0.29	7.63	7,194	<0.05

From the results of Table 4, it is shown that:

After the training process, the physical fitness level of the experimental group improved significantly. The growth rates of the female students in the experimental group after the experiment all showed high values, with growth rates across tests increasing from 4.83% to 22.36%.

In the control group, 2 out of 6 physical assessment tests showed no significant difference, with $t_{calc} < t_{table}$ at the probability threshold $P > 0.05$, namely the 30m Sprint - High Start and Dominant Hand Grip Strength tests; the remaining 4 out of 6 physical tests showed a significant difference, with $t_{calc} > t_{table}$ at the probability threshold $P < 0.05$. The growth rate of the control group after the experiment ranged from approximately 0.92% to 6.72%.

The application of the training program with the selected exercises has clearly demonstrated its effectiveness in developing the physical fitness of female students currently enrolled in the Badminton elective at Ho Chi Minh City University of Industry and Trade.

3. Conclusion

The study has selected 18 physical development exercises for female students in the Badminton elective at Ho Chi Minh City University of Industry and Trade. Initial application of the selected exercises has brought about positive results in developing the physical qualities of the research subjects.

Conflict of Interest Statement
There is no conflict of interest.

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