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Application of Fitness Development Exercises for Female Students Studying Elective Badminton at Tan Trao University, Vietnam

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Abstract:

Using traditional research methods, the thesis selected 24 exercises which applied in the course of elective Badminton to improve general physical for female students at Tan Trao University. The selected exercises have been highly effective in developing physical for female students who choose elective Badminton at Tan Trao University.

Keywords: Badminton, student, physical development, Tan Trao University

1. Introduction

Badminton is a sport that many people like to practice and compete with simple equipment and **court and** easy-to-practice; Badminton is suitable for all ages and genders. Practicing badminton has many effects: enhancing health, personality education, increasing longevity... Although badminton has just been taught at Tan Trao University, it has attracted many students, especially female students, to register for study, extracurricular activities and participate in movement tournaments.

However, through supervision, professional consultation, as well as practical teaching experience, the actual situation of using content, methods, means, physical development for students to learn elective badminton at Tan Trao university, especially female students, is still simple and relatively monotonous, does not attract learners, has not promoted their self-discipline and active practice, so the effectiveness is not high. It is necessary to improve the way and content of training.

Starting from practical requirements, on the basis of theoretical knowledge, new perspectives of training science, I would like to propose the implementation of this topic 'Application Of Fitness Development Exercises For Female Students Studying Elective Badminton At Tan Trao University'

The research used the following methods: method of analysis and synthesis of documents; interview method; method of pedagogical examination; the experimental method of violation; statistical methods.

Research object: 120 second year female students, 3rd year, studying elective badminton at Tan Tuan University.

2. Research Results

2.1. Choosing Exercises to Develop Physical Strength for Female Students Studying Elective Badminton at Tan Trao University

To select exercises to develop fitness for female students at Tan Trao University on method of analysis and synthesis of documents... the article has selected 41 physical exercises for female students studying elective badminton as well as in accordance with the school's facilities and curriculum

Based on our interview results, 24 exercises are selected that are evaluated at priority 1 to priority 3 with a score of 80% or higher to apply to physical development for female students studying elective badminton at Tan Trao University. Those exercises are:

2.1.1. Group of Exercises to Develop Strength (6 Exercises)

Exercise 1: Run high thigh in place for 5 to 10 seconds. 15m fast signal.

- Mass: 3 times*15m, max intensity, rest time: 1 minute

Exercise 2: Move across the singles court 10 times

- Mass: 10 times * 2 groups, maximum exercise intensity, rest between groups: 2 minutes

Exercise 3: Move back and forth 10 times

- Mass: 10 times * 2 groups, maximum exercise intensity, break time between groups: 2 minutes

Exercise 4: Move to pick up the shuttlecock

- How to do it: The waiter standing in the middle of the holds the shuttlecock in piles and throws it over the net at different points on the court so that the player standing in the middle of the court moves to pick up the shuttle with his dominant hand and then throw it back to the waiter.

- Mass: 30s * 2 groups, maximum exercise intensity, break time between groups: 1 minute.

Exercise 5: Low-handed right to left and left to right racket wag: 30s * 2 groups

- How to do it: Stand with feet parallel to shoulder width, knees slightly bent, center of gravity in between legs, back arched. The dominant hand holds the racket, the other hand is relaxed. When there is a signal, immediately swing the right and left racket continuously in the low right and left hand movement continuously for 30 seconds.

- Mass: 30s * 2 groups, maximum exercise intensity, break time between groups: 1 minute.

Exercise 6: coordinate the racket right, left overhand and right left high hand: 30s * 2 groups

- How to do it: Stand with feet parallel to shoulder width, knees slightly bent, center of gravity in between legs, back arched. The dominant hand holds the racket, the other hand is relaxed. Reform a combination of low-hand and high-hand shuttlecocks with single step moves. When given the signal, immediately go forward and hit the shuttlecock with the right hand back to the original position, back to hit the high shuttle with the right hand, go forward and hit the low shuttle with the left hand back to the original position, back and hit the left hand high continuously for 30 seconds.

- Mass: 30s * 2 groups, maximum exercise intensity, break time between groups: 1 minute.

2.1.2. Group of Exercises to Develop Strength (6 Exercises)

Exercise 7: running thigh raise in place with maximum frequency.

- Mass: 15s * 2 groups; break time between groups: 30s; maximum exercise intensity.

Exercise 8: Practice splits

- Mass: 10 times * 2 groups; break time between groups: 30s; maximum exercise intensity.

Exercise 9: Move 2 legs alternately

- Mass: 15s * 2 groups; break time between groups: 30s; maximum exercise intensity.

Exercise 10: Lie on your back with your legs crossed (25s*2 groups).

- Mass: 25s*2 groups; break time between groups: 2minutes; maximum exercise intensity.

Exercise 11: Lying on your stomach doing push-ups.

- Mass: 10 times* 2 groups; break time between groups: 30s; active rest; maximum exercise intensity.

Exercise 12: Long distance shot with server: 25 times * 2 groups.

- Mass: 10-15 times* 2 groups; break time between groups: 2-3 minutes; active rest; maximum exercise intensity.

Exercise 13: Move 3 steps backwards and bounce back and forth continuously.

- Mass: 10 times (When done, return to the original position is counted 1 time)*2 groups; break time between groups: 2-3 minutes; active rest; maximum exercise intensity.

Exercise 14: 10 throws high and long on the spot * 2 groups.

- Mass: each group throws 10 times * 2groups; rest time: 30s-1 minute; active rest; maximum exercise intensity.

2.1.3. Group of Exercises to Develop Endurance (6 Exercises)

Exercise 15: Move from the middle of the court to the four corners to hit the shuttlecock high and far away and push shot.

- How to do it: Stand in the specified box in the middle of the court (1m * 1m) when you hear the signal, move to the right corner of the net, push shot, then move back to the starting point in the middle of the court. continue to move to the bottom corner of the left court and hit the high and far backhand and then move to the starting point continue to move back to the bottom corner of the right court hit the high and far forehand and then move to the middle of the field, so it counts as 1 time.

- Mass: 4 times per a group * 2 groups; break time between groups: 2-3 minutes; active rest; exercise intensity; performed with 80-85% intensity.

Exercise 16: Move the 4 corners of the yard.

- How to do it: Stand in a high starting position on the badminton singles court. when there is a signal, immediately move to a corner of the yard in front, then kick hard back to the center position, then continue to change in the remaining front corner. Repeat until the last 2 corners of the court, so it counts as 1 time.

- Mass: done 4 times on 1 group *2 groups; rest time: 2-3 minutes exercise intensity; performed with 80-85% intensity.

Exercise 17: move forward and backward throw 10 times *2 groups.

- Mass: done 4 times on 1 group *2 groups; rest time: 2-3 minutes; activerest;performed with 80-85% intensity.

Exercise 18: hit the shuttlecock high and then move the circle around the court.

- How to do it: 10 players divides into 2 groups, each side stands at the end of the road at the end of the court, each person hits the shuttlecock once, then move the circle to the other side of the court to hit the shuttlecock, just like that, the two sides must not let the shuttle fall.

- Mass: Move and hit the shuttlecock in 5 minutes per each group *2 groups; rest time: 3 minutes; active rest;performed with 80-85% intensity.

Exercise 19: move 3 times 6 points on the court * 2 groups.

- Mass: 3 times per a group * 2 groups, rest time: 2-3 minutes; activerest;performed with 80-85% intensity.

Exercise 20: move the last 2 corners of the court to hit high and far in 1 minute *2 groups.

- Mass: done 1 minute *2 groups; rest time: 2-3 minutes; activerest;performed with 80-85% intensity.

+ group of exercises to develop motor coordination ability (4 exercises)

Exercise 21: move 2 corners on the grid to drop 10 shuttlecocks in a straight line *2 groups.

- Mass: Each group plays 10 times * 2 groups; break time between groups: 2-3 minutes; active rest; exercise intensity; performed with 80-85% intensity.

Exercise 22: coordinated sector move and manned defense (10 times * 2 groups).

- Mass: each group plays 10 times * 2 groups; break time between groups: 2-3 minutes; active rest; performed with 80-85% intensity.

Exercise 23: move the 2 corners of the net, move back and hit the ball high and far with a waiter (10 times *2 groups).

- Mass: Each group plays 10 times * 2 groups; break time between groups: 2-3 minutes; active rest; performed with 80-85% intensity.

3. Application and Evaluation of the Effectiveness of Physical Development Exercises for Female Students Studying Badminton at Tan Trao University

3.1. Application Organization of Selected Exercises

Experimental method: parallel comparative pedagogical experiment.

Experimental subjects: 120 female students in the 3rd course who are currently studying badminton at Tan Trao University. Experimental subjects were divided into 2 groups.

Group I: is a control group of students who practice according to the school's internal physical education program including 60 female students.

Group II: is an experimental group of students who practice according to the school's internal physical education program and combine the application of newly built exercises (as mentioned above) including 60 female students. Experimental time: experiment for subjects in the second semester of the school year 2020-2021, including 30 periods, 2 periods per week, including 2 theory periods and 2 test periods. Thus, the plan is applied for 13 weeks, each training session is from 15-20 minutes. Exercises to develop speed, strength, and coordination are established at the beginning of the training session, after the general warm-up and the professional warm-up. Endurance exercises and upper body strength exercises are done at the end of the workout, after the main body is completed, before the relaxation session.

The experimental process of exercises for students studying elective badminton at Tan Trao University is presented in Table 1.

N.O	Lesson plan contents	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Exercise 1	M E T H O D		+			+		M I D - T E R M T E S T				+			
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		+		+	+				+						
19	Exercise 19										+		+		+	
20	Exercise 20											+		+		+
21	Exercise 21					+		+			+			+		
22	Exercise 22		+	+	+		+					+				+
23	Exercise 23										+		+		+	+
24	Exercise 24									+		+		+		+

Table 1: The Experimental Process of Exercises for Students Studying Elective Badminton at Tan Trao University Is Presented

3.2. Analysis of Experimental Results

Before the experimental process, we conducted the first test in both the control group and the experimental group through 6 test contents to assess students' fitness as specified in the decision No. 53/2028/Decision of the Ministry of Education and Training on September 18, 2008 of the Minister of Education. The results are presented in Table 2.

Test	Control			Experiment			Reliability	
	n	\bar{X}	$\pm \delta$	n	\bar{X}	$\pm \delta$	t	P
squeeze force of preferred hand(kg)	60	27,49	1,47	60	27,22	1,39	1,063	>0,05
Run 30m XPC(s)	60	6,16	0,33	60	6,17	0,34	0,148	>0,05
turn on the spot(cm)	60	157,13	3,83	60	156,63	3,81	0,717	>0,05
lying supine	60	14,12	2,62	60	14,46	2,48	0,749	>0,05
Run for 5 minutes depending on your strength(m)	60	765,5	7,58	60	736,92	78,61	0,113	>0,05
run the shuttle 4 *10m(s)	60	12,65	0,47	60	12,67	0,49	0,162>	>0,05

Table 2: Pre-Experiment Test Results of Female Students' Physical Fitness Tests in the Control and Experimental Groups
Df = 118, $T_{0,05} = 1,984$

The results of testing the criteria in Table 2 show that the difference in physical fitness tests between the experimental and control groups is not statistically significant, $t_{\text{count}} < t_{\text{table}} = 1,984$ at the threshold of probability $P > 0,05$. In other words, the fitness level of the 3rd course students who are currently studying badminton at Tan Traouniversity at the pre-experimental stage is similar. In order to assess the physical development of experimental subjects after the application of the exercise program, the article examines the physical fitness tests. The test is conducted after the practice period from August 2020 to April 2021, at the end of the semester as well as the end of the physical education program.

The test results are shown in Table 3. $\text{Show } t_{\text{count}} > t_{\text{table}} = 1,984$ at the threshold of probability $P < 0,05$. In other words, the physical exercises that the article initially selects have shown much higher effectiveness than the old exercises that are currently being used in school teaching.

Test	Control			Experiment			Reliability	
	n	\bar{X}	$\pm \delta$	n	\bar{X}	$\pm \delta$	t	P
squeeze force of preferred hand(kg)	60	28,37	1,05	60	30,02	1,29	7,631	>0,05
Run 30m XPC(s)	60	6,14	0,35	60	5,97	0,29	2,819	>0,05
turn on the spot(cm)	60	158,6	2,86	60	163,6	2,74	9,676	>0,05
lying supine	60	15,95	2,11	60	18,9	1,81	8,235	>0,05
Run for 5 minutes depending on your strength(m)	60	800,4	70,33	60	910,7	31,18	11,108	>0,05
run the shuttle	60	12,51	0,43	60	12,19	0,43	3,988	>0,05

Table 3: Post-Experiment Test Results between the 2 Control and Experimental Groups after the End of the Semester
Df = 118, $T_{0,05} = 1,984$

For the purpose of clarifying the selected exercises, we compared the results of the experimental and control groups before and after the experiment. The results we have obtained are presented in Table 4.

Group	Test	Pre-Experiment		Post-Experiment		Comparative		
		\bar{X}	$\pm \delta$	\bar{X}	$\pm \delta$	W	t	P
control group (n=60)	squeeze force of preferred hand(kg)	27,49	1,47	28,37	1,05	3,15	3,761	<0,05
	Run 30m XPC(s)	6,16	0,33	6,14	0,35	0,33	0,466	>0,05
	turn on the spot(cm)	157,13	3,83	158,6	2,86	0,93	2,431	<0,05
	lying supine	14,12	2,62	15,95	2,11	12,71	4,223	<0,05
	Run for 5 minutes depending on your strength(m)	765,5	74,58	800,4	70,33	4,46	2,638	<0,05
	run the shuttle	12,65	0,47	12,51	0,43	1,12	1,804	>0,05
experim ental group (n=60)	squeeze force of preferred hand(kg)	27,22	1,39	30,02	1,29	9,78	11,374	<0,05
	Run 30m XPC(s)	6,17	0,34	5,97	0,29	3,29	3,527	<0,05
	turn on the spot(cm)	156,63	3,81	163,6	2,74	4,35	11,475	<0,05
	lying supine	14,46	2,48	18,9	1,81	26,62	11,163	<0,05
	Run for 5 minutes depending on your strength(m)	763,92	78,61	910,7	31,18	17,53	13,449	<0,05
	run the shuttle	12,67	0,49	12,19	0,43	3,86	5,607	<0,05

Table 4: Compare the Growth Rate of the 2 Control Groups and the Experimental Results of Female Students at Tan Trao University after the Experimental Period
df = 59, $t_{0,05} = 2,00$

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

At the end of the exercise, the experimental group's fitness level had a marked improvement. There was a statistically significant difference in all the evaluation tests, $t_{\text{count}} > t_{\text{table}} = 2,00$ at the threshold of probability $P < 0,05$. The growth rate of female students in the experimental group after the experiment had high growth value, the growth rate in the tests increased from 3% to 26%. the test with the highest growth rate was the 30s supine sit-up test with $W = 26.62\%$ and the test with the lowest growth rate was the 30m XPC(s) running test with $W = 3.29\%$

Only the control group had 2/6 physical fitness tests with no difference with $t_{\text{count}} > t_{\text{table}} = 2,00$ at the threshold of probability $P < 0,05$, those are the 30m XPC running tests and the shuttle running tests $4 \times 10\text{m}$, remaining 4/6 fitness tests showed a difference ($t_{\text{count}} > t_{\text{table}} = 2,00$ at the threshold of probability $P < 0,05$). The growth rate of the control group after the experiment all had growth value, the growth rate in the tests increased from 1% to 12%. The test with the highest growth rate was the 30s supine sit-up test (number of times) with $W = 12.17\%$ and the test with the lowest growth rate was the 30m XPC run test (s) with $W = 0.33\%$.

In other words, the application of a training program with selected exercises has clearly demonstrated its effectiveness in developing physical fitness for female students who are currently studying elective badminton at Tan University at the movement.

4. Conclusion

Research process to select 24 exercises to develop physical strength for female students studying badminton at Tan Trao University.

Through the results of pedagogical experiments proved, the exercises selected by the article were effective in developing the physical qualities of the research subjects, with the confidence level at the threshold of statistical probability with $P < 0,05$.

5. Acknowledgement

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