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Select the application and evaluate exercises to improve the efficiency of the forehand topspin technique in competition for male students of the tennis club of Danang University of physical education and sports

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Abstract
The technical weakness of male students in Tennis Club, Danang University of Physical Education and Sports. This shows that it is very important to select scientific exercises to equip basic techniques for male students. Especially the forehand topspin technique, because it is an important technique that is used mainly in exercises and competition. From the issue mentioned above, finding the exercises to improve the efficiency of the forehand topspin technique for the male students of the Tennis Club of Danang University of Physical Education and Sports is an urgent issue that we need to concern and research.

Keywords: Select, application, evaluate, exercises, tennis club of Danang University of physical education and sports

1. Introduction
1.1. Rationale
In Tennis, there are many different techniques, however, it can be divided into the technique of foot movement and the technique of hand polishing. The technique of hand polishing mainly includes techniques of topspin, backspin, serve, volley, hit and sent. In particular, the technique of forehand topspin technique is one of the most important offensive techniques that is used mainly in exercises and competitions.

2. Research Methods
The research process used methods: Methods of reading and analyzing documents; Method of interviewing discussion; Method of pedagogical observation; Method of the pedagogical test pedagogical experiment; Statistical mathematical methods.

3. Research Results and Discussion
Select and evaluate exercises to improve the efficiency of the forehand topspin technique for male students of the Tennis Club of Danang University of Physical Education and Sports.

3.1 Basic to select the exercises
The requirements for selecting exercises are initially indentified as follows:

- Exercises must be repeated many times to perfect the technique, which must ensure the requirements on necessary space, time, and rhythm.
- Exercises must ensure application from easy to difficult, from simple to complex. This means that it is required to have the lead-in exercises for students to develop and form their polishing technique. The requirements for technical implementation must be increased over time with technical improvement.
- The exercises must be rich and diverse that ensure the requirement of increasing the athletic density for students in the condition that the number of yards, playgrounds, and training equipment is limited.
- Exercises must be suitable for the physiological characteristics, technical levels, physical

strength, and psychology of students.
- Exercises must have a direct or indirect effect on improving the level of polishing techniques for students.
- The exercises are selected on the basis of taking full advantage of the existing facilities, creating excitement and avoiding boredom in the training sessions for students.

Based on principles, methods as well as requirements in teaching and coaching, the research has conducted direct interviews with experts and coaches who have long-term working seniority and experiences nationwide. As a result, the project has selected 20 effective exercises to improve the efficiency of the forehand topspin technique in the competition for the male students of the Tennis Club of Danang University of Physical Education and Sports.

In order to ensure the objective and practical requirements of the coaching for the research subjects, the topic conducted indirect interviews with tennis experts nationwide. All experts are currently teachers of professional sports schools, tennis coaches of provincial, city, and industrial levels across the country with no less than 5 years of experience in tennis. It allows the confirmation that the information got from interviews has certain reliability. The results obtained after the interview are presented in the following table.

Priority 1: 3 points.
Priority 2: 2 points.
Priority 3: 1 point.

Table 1: Interview of selecting exercises to improve the efficiency of forehand topspin technique in competition (n = 20)

No.	Content of the exercises / Level	Interview result						Total points
		Priority 1		Priority 2		Priority 3		
		NP	P	NP	P	NP	P	
*	Exercises to develop fitness							
1	Run 30 meter with high start.	7	21	7	14	6	6	41
2	Move horizontally the single yard 20 times (s)	14	42	4	8	2	2	52
3	Swinging dumbbells 2 (kg) according to the movement of forehand topspin	15	45	3	6	2	2	53
*	Polishing exercises.							
4	Two people polish at different distances.	15	45	4	8	1	1	54
5	Make forehand topspin in place (practice with the machine)	9	27	9	18	2	2	47
6	Make forehand topspin in place in a straight line, diagonal line in place (practice with the machine)	8	24	9	18	3	3	45
7	Forehand topspin in place on one point on the training ground	9	27	10	20	1	1	48
8	Move to make forehand topspin (practice with the machine)	7	21	12	24	1	1	46
9	Move horizontally to make forehand topspin in a straight line and diagonal line(practice with the machine)	20	60	0	0	0	0	60
10	From the middle of the end of the yard, move to the left to make the forehand topspin in a straight line and diagonal line (practice with the machine).	7	21	7	14	6	6	41
11	From the middle position at the end of the yard line, move to the serving box to make the forehand topspin in a straight line and diagonal line (with the server)	20	60	0	0	0	0	60
12	From the position between the two serving boxes, move to the right and make the forehand topspin in the diagonal line to the opposite serving box (with the server).	18	54	2	4	0	0	58
13	Move forward and backward to make the forehand topspin	9	27	6	12	5	5	44
14	From the middle of the end line of the yard, move horizontally to make the and backhand topspin (practice with the machine)	7	21	9	18	4	4	43
15	Move to make the forehand and backhand topspin into a point on the yard (practice with the machine).	4	12	6	12	10	10	34
16	Move horizontally to make the forehand topspin in many different points (practice with the machine)	18	54	2	4	0	0	58
17	Move forward and backward to make the forehand topspin at different points (with the server).	7	21	5	10	8	8	39
*	Competition exercises							
18	Competition exercises (according to the provisions).	20	60	0	0	0	0	60
19	Doubles competition exercises.	20	60	0	0	0	0	60
20	Single competition exercise.	20	60	0	0	0	0	60

(NP: Number of people; P: Point)

Through the interview results, which took the opinion of experts, the topic selected 10 exercises. The exercises selected by experts use priority 1 (accounting for more than 50% of the respondents). Since then we have identified and selected the exercises applied to the experiment.

3.2 Organize the application of selected exercises

Based on the research of theoretical and practical perspectives, the topic has selected 10 exercises to improve the efficiency of the forehand topspin technique for students of the Tennis Club of Danang University of Physical Education and Sports.

From the exercises selected above, we conduct to put a pilot program in the object of the trainee club class. These objects include:

- The club's Tennis Class with 20 students was divided into 2 groups. Group A (experimental group) with 10 students and group B (control group) with 10 students.

The experiment was conducted in 5 months, both groups practiced according to the general training program of the school club.

The conditions to ensure the learning (facilities) of the groups are similar, except that the exercises to teach the forehand topspin technique are applied separately between the experimental group and the control group.

Before conducting the experiment, the topic conducted again an interview to select the most typical Tests to evaluate the efficiency of the forehand topspin technique for tennis club students. Interview results are presented in Tables 3.5 and 3.6.

Table 2: Interview results of the specific test to evaluate efficiency of forehand topspin technique for tennis male students of Danang University of physical education and sports (N = 20)

No.	Priority level / Test	Priority 1		Priority 2		Priority 3		Total points
		NP	P	NP	P	NP	P	
1	Swing dumbbells 2 (kg) according to the movement of forehand topspin	11	33	7	14	2	2	49
2	Move horizontally the single yard 20 times (s)	16	48	4	8	0	0	56
3	Make the forehand topspin in place diagonally in the specified box (15 balls)	16	48	3	6	1	1	55
4	Move to make the forehand topspin in a spot on the yard (15 balls)	17	51	2	4	1	1	56
5	Move to make the forehand topspin in 2 spots on the yard (2 minutes), caculate the balls	16	48	4	8	0	0	56
6	Move to make the forehand topspin in 3 spots on the yard (10 balls/1 point)	18	54	2	4	0	0	58

(NP: Number of people; P: Point)

Through the results in Table 3.2, we have selected 5 specific tests that most of the lecturers, experts, and coaches used priority 1 with 80% of the choice. This indicates the agreement in the selection of tests to evaluate the efficiency of the forehand topspin technique for male tennis students at the Danang University of Physical Education and Sports.

Once again, we have determined the correlation of the tests (selected through the interview) to determine the necessary notification for the research subjects.

The results of determining the notification of tests on research subjects are presented in the following table:

Table 3: Correlation coefficient of selected tests with test performance on research subject.

No.	Test	Correlation coeficient r
1	Move horizontally the single yard 20 times (s)	0,65
2	Make the forehand topspin in place diagonally in the specified box (15 balls)	0,77
3	Move to make the forehand topspin in a spot on the yard (15 balls)	0,82
4	Move to make the forehand topspin in 2 spots on the yard (2 minutes), caculate the balls	0,79
5	Move to make the forehand topspin in 3 spots on the yard (10 balls/1 point)	0,76

The results in Table 3.3 show that all 5 selected tests are informative with test achievements (r> 0.6).

In order to determine the reliability of the test on the research subjects, the topic has conducted the determination of the reliability of tests through the retest method (retest: determining the reliability coefficient between the results of two tests at the same time, conditions, and subjects). The results are presented in the following table:

Table 4: The reliability of the selected tests with test achievements of male students of Da Nang University of physical education and sports (n = 20)

TT	Test	Time 1		Time 2		r
		$\bar{x}$	δ	$\bar{x}$	δ	
1	Move horizontally the single yard 20 times (s)	46,4	0,54	46,7	0,36	0,87
2	Make the forehand topspin in place diagonally in the specified box (15 balls)	7,59	0,71	7,38	0,63	0,83
3	Move to make the forehand topspin in a spot on the yard (15 balls)	6,98	0,67	7,13	0,71	0,88
4	Move to make the forehand topspin in 2 spots on the yard (2 minutes), caculate the balls	14,52	0,34	13,21	0,57	0,69
5	Move to make the forehand topspin in 3 spots on the yard (10 balls/1 point)	7,55	0,73	7,80	0,79	0,86

The results in the table above show that from 5 tests selected through interviews when determining the reliability among those tests and the test achievements of the male tennis students of the Danang University of Physical Education and Sports, we selected 4 reliable tests to evaluate the efficiency of the forehand topspin technique for male students of the Tennis Club of the Danang University of Physical Education and Sports (with r> 0.80). The test selected are:

Test 1: Move horizontally the single yard 20 times (s)

Test 2: Make the forehand topspin in place diagonally in the specified box 15 balls (times)

Test 3: Move to make the forehand topspin in a spot on the yard 15 balls (times)

Test 4: Move to make the forehand topspin in 3 spots on the yard (10 balls/1 point)

The ways to implement the tests to evaluate the efficiency of the forehand topspin technique for male students of the Tennis Club of Da Nang University of Physical Education and Sports.

3.2 Evaluate the application of selected exercises

3.2.1 The test results before experiment

Table 5: Comparison of results of the initial testing achievements of the experimental and control groups (n = 20).

Parameters / Test	$\overline{X}_A \pm \delta$ (n = 10)	$\overline{X}_B \pm \delta$ (n = 10)	$T_{caculate}$	T_{table}	P
Test 1 (s)	45,7 ± 0,46	45,2 ± 0,44	1,394	2,179	> 0,05
Test 2 (ball)	7,35 ± 0,69	7,41 ± 0,76	0,132	2,179	> 0,05
Test 3 (ball)	6,84 ± 0,61	6,69 ± 0,70	0,347	2,179	> 0,05
Test 4 (ball)	7,07 ± 0,69	7,12 ± 0,74	0,111	2,179	> 0,05

With the results obtained as in the above table, it shows that the achievements of both experimental and control groups are similar $t_{caculate} < t_{table\ at}$ probability threshold P > 0,05.

- Test 1: $t_{caculate} = 1,394 < t_{table} = 2,179$
- Test 2: $t_{caculate} = 0,132 < t_{table} = 2,179$
- Test 3: $t_{caculate} = 0,347 < t_{table} = 2,179$
- Test 4: $t_{caculate} = 0,111 < t_{table} = 2,179$

This means that the grouping is random and the level of two groups before the experiment is practically the same with no difference in the initial level.

3.2.2 Test results after experiment

After the time we applied the selected exercises to improve the efficiency of the forehand topspin technique, the test results of both groups are presented in the following table:

Table 6: Comparison of the results of test achievements after (6 weeks) of experimental and control group (N = 20)

Parameters / Test	$\overline{X}_A \pm \delta$ (n = 10)	$\overline{X}_B \pm \delta$ (n = 10)	$T_{caculate}$	T_{table}	P
Test 1 (s)	43,6 ± 0,42	44,1 ± 0,39	1,470	2,179	> 0,05
Test 2 (ball)	9,74 ± 0,91	8,02 ± 0,86	2,432	2,179	< 0,05
Test 3 (ball)	8,92 ± 0,82	7,81 ± 0,80	2,307	2,179	< 0,05
Test 4 (ball)	9,38 ± 0,91	8,25 ± 0,81	2,280	2,179	< 0,05

Through the table, it can be seen that: Test results of the 2 groups in all 4 tests have an increase in achievement. However, only three tests showed clearly that the increase in the achievements of experimental group A is better than control group B. It shows $t_{caculate} > t_{table}$. That means that the difference of achievement between 2 groups A and B is significant at probability threshold P <0.05. However, there is still test 1 with unclear growth with the show that $t_{caculate} < t_{caculate}$ at the probability threshold P > 0,05

- Test 1: $t_{caculate} = 1,470 < t_{table} = 2,179$
- Test 2: $t_{caculate} = 4,432 > t_{table} = 2,179$
- Test 3: $t_{caculate} = 2,307 > t_{table} = 2,179$
- Test 4: $t_{caculate} = 2,280 > t_{table} = 2,179$

From the results obtained after (6 weeks) we continue to experiment in stage 2, the results obtained are presented in Table 7.

Table 7: Comparison of results and test achievements after 3 months of experimental group and control group (n = 20).

Parameters / Test	$\overline{X}_A \pm \delta$ (n = 10)	$\overline{X}_B \pm \delta$ (n = 10)	$T_{caculate}$	T_{table}	P
Test 1 (s)	42,1 ± 0,39	43,5 ± 0,43	4,090	2,179	< 0,05
Test 2 (ball)	12,34 ± 1,22	10,07 ± 0,92	4,106	2,179	< 0,05
Test 3 (ball)	11,63 ± 1,09	9,92 ± 0,97	3,152	2,179	< 0,05
Test 4 (ball)	11,78 ± 1,13	9,44 ± 0,98	4,356	2,179	< 0,05

From the table above, it can be seen that: After 3 months of experimenting, the test achievement of both groups has significantly increased compared to before the experiment. However, comparing the experimental group A and control group B, we find that the achievements of the experimental group are much higher than the control group in all tests that show $t_{caculate} > t_{table}$ at the probability threshold P < 0,05.

- Test 1: $t_{caculate} = 4,090 > t_{table} = 2,179$
- Test 2: $t_{caculate} = 4,106 > t_{table} = 2,179$
- Test 3: $t_{caculate} = 3,152 > t_{table} = 2,179$
- Test 4: $t_{caculate} = 4,356 > t_{table} = 2,179$

Once again, to confirm the efficiency of the selected exercises to apply to male students of the Tennis club of Da Nang University of Physical Education and Sports. We conducted the evaluation of the growth rate of the experiments in the experimental and control groups, the results are presented in Table 8.

Table 8: Growth rate on the achievements of the two groups through experimental testing time.

GROUP	Test	$\bar{X}$			W%		
		Original time (1)	Afer 6 weeks (2)	After 12 weeks(3)	W_{1-2}	W_{2-3}	W_{1-3}
Experimental group A (n= 10)	Test 1	45,7	43,6	42,1	4,70	3,50	8,20
	Test 2	7,35	9,74	12,34	27,97	23,55	50,69
	Test 3	6,84	8,92	11,63	26,40	26,37	51,87
	Test 4	7,07	9,38	11,78	28,09	22,68	49,97
Control group B (n= 10)	Test 1	45,2	44,1	43,5	2,46	1,37	3,83
	Test 2	7,41	9,02	10,07	19,60	11,00	30,43
	Test 3	6,69	7,81	9,92	15,45	23,80	38,89
	Test 4	7,12	8,25	9,44	14,70	13,45	28,02

From the results presented in Table 3.11 above we have the following comment:
The achievements after the experiment of the control group showed increasing over each stage, the growth rate of the tests was uneven. Specifically as follows:
+ Test 1: From,46 - 3,83.
+ Test 2: From 19,60 - 30,43.
+ Test 3: From 15,45 - 38,89.
+ Test 4: From 14,70 - 28,02.

Thus, the exercises under the training program of the club applied are also valuable to improve the efficiency of the forehand topspin technique for the male students of the Tennis Club of the Danang University of Physical Education and Sports. To confirm the efficiency of the exercises that we selected to apply to the experimental group, let's analyze and find out the growth rate after 3 months of the experimental group.

The table above shows us that the achievements of the experimental group have increased over time, with the show that $\overline{X}$ and W% of the post-period is higher than the previous period. Specific growth rates are as follows:
+ Test 1: From 4,70 - 8,20
+ Test 2: From 27,97 - 50,69
+ Test 3:From 26,40 - 51,87
+ Test 4: From 28,09 - 49,97

This proves that the exercises that we choose to apply to the training experience for the male students of Tennis Club of Da Nang University of Physical Education and Sports have high results..
After an experimental time, to verify the efficiency of using techniques in competition, we collected again data using techniques over 10 competitions, to evaluate the ability to use the forehand topspin technique in the competition. Results are presented in the following table.

Table 9: Results of using forehand topspin technique of 2 groups in competition.(n= 5 single matches and 5 double matches)

No.	Group	Single competition			Double competition		
		Number of times using the technique	Effeciency		Number of times using the technique	Effeciency	
			Quantity	Rate%		Quantity	Rate%
1	Experimental group	407	305	74,9	213	150	70,4
2	Control group	378	240	63,5	227	145	63,8

In summary, after 3 months of experimenting on the male students of Tennis Club of Da Nang University Physical Education and Sports, the test results in the experimental group had much higher achievement than the control group. This proves that the exercises that the topic chose to practice to improve the efficiency of the forehand topspin technique for the male students of the Tennis Club of Danang University of Physical Education and Sports brought higher efficiency than the exercises that were previously applied.

4. Conclusion

The topic selected the system of exercises to improve the efficiency of the forehand topspin technique for male students of the Tennis Club of Danang University of Physical Education and Sports. Specifically, 10 selected exercises are presented in the thesis.
Through the application of exercises in the experimental process on the research subjects, The results demonstrates that the exercises selected to apply to practice by the topic are more effective. Results after 3 months of experimenting on male students of the Tennis club of the Da Nang University of Physical Education and Sports showed that the achievement of the experimental group was much higher than the control group and all had the reliability level at probability threshold with $P<0.05$. This once again confirms the efficiency and high practical value of the selected exercises.

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