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Evaluating the efficiency of the system of professional supplementary exercises in teaching basic overhand volleyball passing technique for volleyball-intensive students at danang university of physical education and sports

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Abstract
The efficiency of the system of professional supplementary exercises in teaching overhand volleyball passing technique greatly affects the competition performance of volleyball athletes. In order to teach and train this technique effectively, it's necessary for teachers and coaches to use a lot of professional supplementary exercises. Through a practical survey of the teaching of volleyball-intensive subject at the school, we have evaluated the limitations in teaching – training basic overhand volleyball passing technique, in which the application of professional supplementary exercises is an important factor.

Keywords: Evaluate, system, exercise, volleyball, student

1. Introduction
The basic techniques in volleyball in general and the basic overhand volleyball passing technique in particular are increasingly being renovated and improved according to the complex and transforming trend. Therefore, in teaching, it is necessary for us to frequently innovate the teaching methods and training facilities in order to improve those techniques. However, this issue so far has not been paid attention and studied adequately.
Surveying the practice training process for volleyball students at Danang University of Physical Education And Sports in recent years proved the fact that, although the school has innovated the enrollments and teaching methods, the training result on technical practice in general and basic overhand volleyball passing technique in particular for volleyball-intensive students have not achieved the desired results, namely:

- Students' basic technical level of overhand volleyball passing in the same course and other courses are unequal. Many students still lack basic technical qualification before their completion of the second academic year.
- The practical technical training after three academic years hasn't achieved the high results, the number of intensive students hasn't reached the athletes level II accounts for a large proportion.

We recognize that the training process has revealed a number of issues that significantly affect the quality of training including the school has not determined the proportion of technical, tactical and physical training sessions. Especially, the system of professional exercises, physical training exercises and professional supplementary exercises have not been built accordingly for the practice of volleyball passing technique and necessary professional physical strength development.

2. Research Method
The research process uses the following methods: documents analysis and synthesis; interview; pedagogical observation; pedagogical examination; pedagogical experiment; mathematical statistics.

3. Research Result

Evaluating the efficiency of using the system of professional supplementary exercises in the process of teaching basic overhand volleyball passing technique for volleyball-intensive students at Danang University of Physical Education and Sports.

3.1 Organizing the pedagogical experiment

Researching and applying the exercises for research subjects for a period of 08 months (corresponding to 01 academic year in the volleyball curriculum) at Danang University of Physical Education and Sports.

Before the experiment, we checked the initial performance of the two experiment and control groups with the same contents with 14 male volleyball-intensive students of the university course 40 at Danang University of Physical Education and Sports including 7 male students in experiment group and 7 male students in control group.

The whole experimental process was conducted in 8 months (from August 2006 to April 2007). Experimental subjects were divided into 2 groups and randomly selected:

During the experiment period of 08 months, when conducting the experiment, we conducted the initial examination and periodic examination (after 04 months - ending the third semester, 08 months - ending the fourth semester) as planned. In teaching, we do not use it as a basis to evaluate the impact level of selected exercises.

Students in both groups (control and experiment) prior to the pedagogical experiments are subjected to pedagogical tests for determining the uniformity level in basic technical level of overhand volleyball passing.

3.2 Building a process of teaching and training basic overhand volleyball passing technique for the experimental subjects based on the system of selected exercises.

Based on the curriculum, plan, process and lesson plan of the school and the subject, we build a teaching - training program for basic overhand volleyball passing technique for the experimental team.

The training time is 04 periods / 1 week (according to the school's schedule). The practicing time from 90 minutes - 105 minutes. The total number of lesson plans for volleyball teaching in both semesters in an academic year of the pedagogical experiment program (August 2006 to April 2007) is 59 lesson plans. The practicing time is based on the content and curriculum. The teaching - training time for basic overhand volleyball passing technique is strictly managed by the teachers in each group, eliminating the objective factors which affect the training, only remaining the impact of the exercises on each research group.

3.3 Pedagogical experiment result

3.3.1 Test result prior to the experiment

Prior to the experiment, we conducted assessment on selected tests to evaluate the uniformity level between the two experimental and control groups. The results are shown in the Table 3.1.

Table 3.1: Examination results of tests for evaluating the basic overhand volleyball passing technique of research objects prior to the experiment.

No	Test	Test Result ($\overline{x} \pm \delta$)		t	P
		Control Group (n = 7)	Experimental Group (n = 7)		
1	Passing the ball to the target (point).	7.09±0.56	7.40±0.53	-1.064	>0.05
2	Passing the ball overhand, in front of to the numbers 3-4 (points).	7.03±0.56	7.34±0.53	-1.064	>0.05
3	Passing the ball overhand, behind the head to the numbers 3 - 2 (points).	6.58±0.48	7.02±0.51	-1.662	>0.05
4	Run 9 - 3 - 6 - 3 - 9 (s).	8.71±0.61	8.24±0.64	1.406	>0.05
5	Jump on with momentum (cm).	283.34±21.88	289.86±21.39	-0.564	>0.05
6	Run the pine (s).	24.62±1.75	23.28±1.85	1.392	>0.05
7	Front-flip jump combined with momentum running for jumping and throwing the ball stuffed with two hands through the net (s).	21.87±1.48	20.69±1.56	1.452	>0.05
8	Synthetic test (time).	5.46±0.52	5.49±0.55	-0.105	>0.05

From the results collected in the Table 3.1, we found that there haven't been different in the examination results of the selected tests between the two experimental and control groups, $t_{calculating} < t_{table} = 2.179$ at probability threshold $P > 0.05$), it proves that, before conducting the experiment, the basic technical level of overhand volleyball passing of the two groups are equal.

3.3.2. Test results after 04-month experiment (Table 3.2).

After the 04-month experimental period - the end of the third semester, we conducted a test to evaluate the basic technical level of overhand volleyball passing of the two groups through the selected tests. The results are shown in the table 3.2.

Table 3.2: Examination results of tests for evaluating the basic technical level of overhand volleyball passing for research objects after the 4-month experiment.

No	Test	Test Result ($\overline{x} \pm \delta$)		t	P
		Control Group (n = 7)	Experimental Group (n = 7)		
1	Passing the ball to the target (point).	7.18±0.47	7.73±0.45	-2.236	<0.05
2	Passing the ball overhand, in front of to the numbers 3-4 (points).	7.13±0.48	7.68±0.46	-2.189	<0.05
3	Passing the ball overhand, behind the head to the numbers 3 - 2 (points).	7.11±0.45	7.58±0.51	-1.828	>0.05
4	Run 9 - 3 - 6 - 3 - 9 (s).	8.12±0.51	7.53±0.50	2.186	<0.05
5	Jump on with momentum (cm).	282.51±21.29	306.66±20.13	-2.181	<0.05
6	Run the pine (s).	22.87±1.44	21.20±1.42	2.185	<0.05

7	Front-flip jump combined with momentum running for jumping and throwing the ball stuffed with two hands through the net (s).	20.29±1.18	18.92±1.16	2.191	<0.05
8	Synthetic test (time).	6.06±0.56	6.59±0.53	-1.819	>0.05

From the results collected in the Table 3.2 shows: Most of the tests have been different (6/8 test), $t_{calculating} < t_{table} = 2.179$ at probability threshold P <0.05); however, this difference is not too large. In other words, the application of professional supplementary exercises applied in teaching - training basic overhand volleyball passing technique that we selected for the topic, initially it has proved the remarkable efficiency in improving the basic technical level of overhand volleyball passing of volleyball-intensive students at Danang University of Physical Education and Sports.

3.3.3 Test results after 8-month experiment

After the 08-month experimental period, the research subjects were relatively adequately equipped with professional ability, technique, tactic, physical strength as well as psychology, basic techniques in general and basic overhand volleyball passing technique in particular in teaching-training curriculum of volleyball, we conducted assessment and evaluation of the basic technical level of overhand volleyball passing of the research subjects in the two experimental and control groups. The results are shown in the Table 3.3 to 3.6.

Table 3.3: Examination results of tests for evaluating basic overhand volleyball passing technique of research objects after 8-month experiment.

No	Test	Test Result ($\bar{x} \pm \delta$)		t	P
		Control Group (n = 7)	Experimental Group (n = 7)		
1	Passing the ball to the target (point).	7.86±0.61	8.62±0.55	-2.448	<0.05
2	Passing the ball overhand, in front of to the numbers 3-4 (points).	7.53±0.65	8.56±0.57	-3.152	<0.05
3	Passing the ball overhand, behind the head to the numbers 3 - 2 (points).	7.45±0.61	8.49±0.55	-3.350	<0.05
4	Run 9 - 3 - 6 - 3 - 9 (s).	7.81±0.37	7.33±0.34	2.527	<0.05
5	Jump on with momentum (cm).	297.65±25.5	337.69±22.47	-3.117	<0.05
6	Run the pine (s).	22.05±0.94	20.71±1.01	2.570	<0.05
7	Front-flip jump combined with momentum running for jumping and throwing the ball stuffed with two hands through the net (s).	19.61±0.82	18.22±0.9	3.021	<0.05
8	Synthetic test (time).	6.73±0.57	7.58±0.56	-2.814	<0.05

Table 3.4: Comparing results of self-collation of tests for evaluating the basic technical level of overhand volleyball passing before and after the experiment of the two group of research subjects.

No	Test	Control Group (n = 7) (t_{table} with P<0.05 = 2.179)		t	Experimental Group (n = 7) (t_{table} with P<0.05 = 2.179)		t	P
		Before Experiment	After Experiment		Before Experimen	After Experiment		
1.	Passing the ball to the target (point).	7.09±0.56	7.86±0.61	-4.649	7.40±0.53	8.62±0.55	-7.986	<0.05
2.	Passing the ball overhand, in front of to the numbers 3-4 (points).	7.03±0.56	7.53±0.65	-2.914	7.34±0.53	8.56±0.57	-7.837	<0.05
3.	Passing the ball overhand, behind the head to the numbers 3 - 2 (points).	6.58±0.48	7.45±0.61	-5.604	7.02±0.51	8.49±0.55	-9.799	<0.05
4.	Run 9 - 3 - 6 - 3 - 9 (s).	8.71±0.61	7.81±0.37	6.307	8.24±0.64	7.33±0.34	6.278	<0.05
5.	Jump on with momentum (cm).	283.34±21.88	297.65±25.5	-2.129	289.86±21.39	337.69±22.47	-7.709	<0.05
6.	Run the pine (s).	24.62±1.75	22.05±0.94	6.469	23.28±1.85	20.71±1.01	6.097	<0.05
7.	Front-flip jump combined with momentum running for jumping and throwing the ball stuffed with two hands through the net (s).	21.87±1.48	19.61±0.82	6.679	20.69±1.56	18.22±0.9	6.857	<0.05
8.	Synthetic test (time).	5.46±0.52	6.73±0.57	-8.230	5.49±0.55	7.58±0.56	-13.313	<0.05

Table 3.5: The growth rate of tests for evaluating the basic technical level of overhand volleyball passing of the experimental group through the periods of experimental process (n = 7).

No	Test	Test results through the experimental periods ($\bar{x} \pm \delta$)			Growth Rate (W%)		
		Before Experiment (1)	After 04-month experiment (2)	After 08-month experiment (3)	W_{1-2}	W_{2-3}	W_{1-3}
1.	Passing the ball to the target (point).	7.40±0.53	7.73±0.45	8.62±0.55	4.362	10.887	15.231
2.	Passing the ball overhand, in front of to the numbers 3-4 (points).	7.34±0.53	7.68±0.46	8.56±0.57	4.527	10.837	15.346
3.	Passing the ball overhand, behind the head to the numbers 3 - 2 (points).	7.02±0.51	7.58±0.51	8.49±0.55	7.671	11.325	18.956
4.	Run 9 - 3 - 6 - 3 - 9 (s).	8.24±0.64	7.53±0.50	7.33±0.34	9.004	2.692	11.689
5.	Jump on with momentum (cm).	289.86±21.39	306.66±20.13	337.69±22.47	5.633	9.631	15.243

6.	Run the pine (s).	23.28±1.85	21.20±1.42	20.71±1.01	9.353	2.338	11.684
7.	Front-flip jump combined with momentum running for jumping and throwing the ball stuffed with two hands through the net (s).	20.69±1.56	18.92±1.16	18.22±0.9	8.937	3.770	12.696
8.	Synthetic test (time).	5.49±0.55	6.59±0.53	7.58±0.56	18.212	13.973	31.982

Table 3.6: The growth rate of tests for evaluating the basic technical level of overhand volleyball passing of the control group through the periods of experimental process (n = 7).

No	Test	Test results through the experimental periods ($\overline{x} \pm \delta$)			Growth Rate (W%)		
		Before Experiment (1)	After 6-month experiment (2)	After 12-month experiment (3)	W_{1-2}	W_{2-3}	W_{1-3}
	Passing the ball to the target (point).	7.09±0.56	7.18±0.47	7.86±0.61	1.261	9.043	10.301
	Passing the ball overhand, in front of to the numbers 3-4 (points).	7.03±0.56	7.13±0.48	7.53±0.65	1.412	5.457	6.868
	Passing the ball overhand, behind the head to the numbers 3 - 2 (points).	6.58±0.48	7.11±0.45	7.45±0.61	7.743	4.670	12.402
	Run 9 - 3 - 6 - 3 - 9 (s).	8.71±0.61	8.12±0.51	7.81±0.37	7.011	3.892	10.896
	Jump on with momentum (cm).	283.34±21.88	282.51±21.29	297.65±25.5	0.293	5.219	4.926
	Run the pine (s).	24.62±1.75	22.87±1.44	22.05±0.94	7.370	3.651	11.013
	Front-flip jump combined with momentum running for jumping and throwing the ball stuffed with two hands through the net (s).	21.87±1.48	20.29±1.18	19.61±0.82	7.495	3.409	10.897
	Synthetic test (time).	5.46±0.52	6.06±0.56	6.73±0.57	10.417	10.477	20.837

From the results collected in the Tables 3.3 to 3.6 reflect:

- All the contents for testing and evaluating the basic technical level of overhand volleyball passing of the two experimental and control group have been significantly differrent, $t_{calculating}$ equal > t_{table} = 2.179 at probability threshold P < 0.05. In other words, the application of training facilities as well as the system of professional supplementary exercises that we selected for the topic have proved the remarkable efficiency in improving the basic technical level of overhand volleyball passing of volleyball-intensive students at Danang University of Physical Education and Sports.

- When comparing by using self-collation method for all the contents used to test and evaluate the basic technical level of overhand volleyball passing after 08-month experimental period of the two experimental and control groups, we found that there have been significantly differrent in the two groups, $t_{calculating}$ equal > t_{table} = 2.179 at probability threshold P < 0.05; however, in this difference, the experimental group had a much larger difference compared to the control group. This shows that, after the 08-month experimental period, the system of training facilities as well as the system of professional supplementary exercises that we selected for the topic has brought the remarkable efficiency in improving the basic technical level of overhand volleyball passing for the research objects.
- The achievement progress in all 08 tests for testing and evaluating the basic technical level of overhand volleyball passing of the experimental group increased bigger than the control group, furthermore the growth rate of the experimental group was also larger than the control group.

Moreover, we conducted a comparison of the results of assessment and evaluation of the basic technical level of overhand volleyball passing between the control group and the experimental group. The results of technical examination and evaluation are organized and evaluated by the volleyball teachers on the score scale prescribed by the subject.
The results are shown in the Table 3.7.

Table 3.7: Comparing the results of assessment and evaluation of basic overhand volleyball passing technique of the two control and experimental groups ater the experiment.

Ranking	Result of technical examination and evaluation		Total
	Experimental Group (n = 7)	Control Group (n = 7)	
A	5	0	5
	2.500	2.500	
B	2	4	6
	3.000	3.000	
C	0	3	3
	1.500	1.500	
Total	7	7	14
Compare	$\chi^2_{tính} = 8.667 > \chi^2_{0.05} = 7.815$ với P < 0.05		

From the results collected in the Table 3.7 shows that, when comparing the results of assessment and evaluation of basic overhand volleyball passing technique of the two groups of the research objects, we found that there have been significantly differrent in the results of assessment and evaluation of basic overhand volleyball passing technique between the two groups with $\chi^2_{calculating} = 8.667 > \chi^2_{table} = 7.815$ with P < 0.05. That once again confirms the remarkable efficiency of the system of professional supplementary exercises applied in teaching - training basic overhand volleyball technique for research subjects.

4. Conclusion

In the research process of the topic, we also selected 58 professional supplementary exercises in 06 groups applied in teaching - training basic overhand volleyball passing technique for volleyball-intensive students at Danang University of Physical Education and Sports, including:

- Group 1: Group of supplementary exercises without ball (6 exercises).
- Group 2: Group of supplementary exercises with ball (16 exercises).
- Group 3: Group of supplementary standard ball passing exercises - individual (20 exercises).
- Group 4: Group of group tactical supplementary exercises - the whole team (7 exercises).
- Group 5: Group of whole team coordination training exercises (2 exercises)
- Group 6: Group of physical development exercises (7 exercises).

Through the process of pedagogical experiment with a period of 08 months, the topic has determined the remarkable efficiency of the system of professional supplementary exercises selected and applied in teaching - training of basic overhand volleyball passing technique for the research subjects ($t_{calculating} > t_{table}$ at probability threshold $P < 0.05$).

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