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THE EFFECTIVENESS OF PHYSICAL ABILITY DEVELOPMENT ACTIVITIES FOR STUDENTS OF SOME SECONDARY SCHOOLS IN HO CHI MINH CITY, VIETNAM

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Abstract:
The effectiveness of physical capacity development activities for students is an important criterion in evaluating physical education. The development of students' physical capacity contributes to comprehensive growth and meets the current requirements of educational innovation. The research objective is to provide information about the effectiveness of physical activities in developing physical capacity for students in some secondary schools in Ho Chi Minh City. The study employs common research methods in the field of physical education and sports, such as document synthesis and analysis, interviews, and statistical analysis. The research subjects include 193 male students, 147 female students in secondary schools in Ho Chi Minh City and 30 physical education teachers, experts, and athletics coaches. The experimental results of motor activities have brought positive effects in developing physical abilities for students of some secondary schools in Ho Chi Minh City. The physical fitness growth was from 1.68 -13.29% for males and from 2.54 - 12.63% for females. Regarding motor skills, there was a clear shift between the levels of achievement and good, accounting for a higher proportion than before the experiment.

Keywords: physical capacity, physical strength, motor skills, secondary school

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1. Introduction

Ho Chi Minh City is a young, modern city with many amenities as well as development in infrastructure, economy, culture, society... Along with the development in all aspects, education is also a field that the city is interested in and has high expectations. Along with the innovation of training programs for all levels, schools in Ho Chi Minh City are also receiving and gradually reviewing and evaluating the effectiveness of the program on the development of students in terms of qualities and abilities. This is a locality that has almost all the favorable conditions to conduct experiments and innovations to help improve the quality of teaching in schools, and at the same time, affirm its position in student training nationwide.

In scientific research topics, the thesis has been published on the research direction of applying a type of physical activity, such as physical games, to improve physical fitness for students, which is quite popular. However, the research content on the new general education program, as well as the development of physical activities to help students meet the requirements of the new program, has not been available and has not been evaluated for effectiveness.

Therefore, researching and finding effective physical activities for developing physical capacity for students in some secondary schools in Ho Chi Minh City is currently an urgent issue that needs to be addressed.

On that basis, the topic of the research is: "The effectiveness of physical activities to develop physical capacity for students in some secondary schools in Ho Chi Minh City".

2. Materials & methods

2.1 Participants

2.1.1 Participants for evaluating the current status

Based on the division of geographical locations in Ho Chi Minh City, the characteristics of the schools' facilities, the nature of the schools (public, private, international), the study limits the scope of the research object to students of the following schools: Chu Van An Secondary School, District 1; Tran Quoc Toan 1 Secondary School, Thu Duc City; Hong Bang Secondary School, District 5; Hoang Dieu Secondary School, Tan Phu District; Viet My Secondary School, District 11. The research object includes 193 male students and 147 female students in grade 6 of 5 experimental schools.

2.1.2 Participants for selecting the criteria and revising the survey instrument

30 experts in the field of physical education include lecturers teaching Athletics, teachers teaching Physical Education in secondary schools.

2.2 Methodology

2.2.1 Literature review

The study consults documents such as: documents, legal documents of the State, Ministry of Education and Training, schools, etc.; Textbooks, reference materials, monographs, scientific journals, conference proceedings, etc.; research topics, theses, dissertations of authors that have been evaluated and accepted. In addition, documents are also consulted and synthesized through specialized websites on Athletics, physical education in schools, and related content.

2.2.2 Survey

The interview method is used to collect information related to the research problem through the form of questions and answers according to a prepared plan. The form of interview and survey includes indirect methods through paper questionnaires. The answers are recorded and statistically entered. In the study, we use this method to collect information about physical activities, conditions of facilities, teachers, and criteria for assessing physical capacity according to the regulations of the new general education program 2018 for secondary school students from experts, education managers, and especially teachers directly teaching physical education at secondary schools in Ho Chi Minh City through the form of interview questionnaires. We expect to record the opinions of 30 experts.

2.2.2.1 Statistical analysis

This method is used to process and analyze the collected data. All data collected during the research process are analyzed using statistical methods, supported by SPSS 22.0 software.

3. Results and Discussion

3.1 Basis for selecting physical activities to develop physical capacity for students of some secondary schools in Ho Chi Minh City

3.1.1 Legal basis

- Decision No. 1611/QD-BGDDT dated May 10, 2017 of the Minister of Education and Training.
- Plan 398/KH-BGDDT dated May 9, 2019, on implementing the Conclusion of Minister Phung Xuan Nha at the conference "Improving the quality of Physical Education and School Sports in the Education sector".
- Decision 53/2008/QD-BGDDT dated September 18, 2008, on assessing students' physical fitness.
- Physical education subject program issued by the Ministry of Education and Training in 2018, Physical Education subject. [7][8][9][10]

3.1.2 Theoretical basis

3.1.2.1 The World Athletics Federation's Athletics Curriculum for Children:

IAAF (International Association of Athletics Federations) is known as the International Athletics Federation (now renamed World Athletics) is an international sports governing organization specializing in athletics, the World Athletics Federation's Athletics Program for Children was established in 2005 and has been implemented in 134 member federations and has reached the number of children following and participating in training up to 13 million children. [12]

3.1.2.2 World Athletics Federation's online learning materials for Level 1 Coaches on teaching Athletics techniques

The Federation has designed documents into online learning materials on a digital platform and allows users to refer to, use and apply knowledge that has been standardized and updated according to the most advanced changes today. [13]

3.1.2.3 Teaching materials for Athletics of specialized universities, teaching materials for Physical Education for 6th grade students

The curriculum and teaching materials for Athletics of specialized universities are one of the important and reliable sources of documents. [5]

3.1.2.4 Documents on folk games

Folk games are a type of game created by working people based on daily labor activities, in the form of simulating those activities. Folk games are not only games for children but also contain unique Vietnamese national culture. [6][14]

3.1.2.5 Practical basis

- Practical facilities,
- Practical teaching staff.

3.2 Synthesize, select and identify physical activity activities to develop physical capacity for students in some secondary schools in Ho Chi Minh City

Through synthesizing the documents presented in the theoretical basis, the topic has proposed appropriate physical activities for each group of factors to develop physical capacity.

To ensure logic, science and rigor, the topic conducted interviews with 30 experts, including lecturers teaching Athletics, teachers participating in teaching Physical Education in secondary schools, with 5 levels corresponding to the score:

- Very suitable (5 points),
- Quite suitable (4 points),
- Suitable (3 points),
- Less suitable (2 points), and
- Not suitable (1 point).

However, when collecting statistics, the study recorded the results with selections from the Appropriate level (d points) and above, so the results table is presented at 3 levels. The results of selecting movement activities are activities with the expert selection rate reaching over 85% and are presented in the following table:

Table 1: Interview results to select physical activities for grade 6 students

Grade 6		Number of choices			Total score	Percentage
		3 score	4 score	5 score		
Sprint Topic						
Motor Skills Supplemental Activities Group						
1	Additional movements: small steps, thigh lifts, back kicks, heels touching buttocks, hand strikes on the spot	1	2	27	146	97.33
2	High start and acceleration run after the start	1	10	19	138	92.00
3	Start on command	2	12	16	134	89.33
4	High speed run	10	15	5	115	76.67
5	Acceleration run	3	15	12	129	86.00
6	Repeat run at the required speed	2	17	11	129	86.00
7	On the spot perform the movement of bending the body to hit the target	5	10	15	130	86.67
Physical Development Activity Group						
1	4x10m Shuttle Run	10	16	4	114	76.00
2	Reflexes	5	12	13	128	85.33
3	Back and Abdominal Exercises	4	10	16	132	88.00
Game Activity Group						
1	Ants Carrying Food	0	16	14	134	89.33
2	Ring Relay Race	0	5	25	145	96.67
3	Who is Faster	0	12	18	138	92.00
4	Squirrels on a Ladder	12	12	6	114	76.00
5	Let's do Math Together	4	11	15	131	87.33
Throwing Ball Topic						
Motor Skills Supplemental Activities Group						
1	Throw the ball with two hands over the head, forward and back	0	20	10	130	86.67
2	Throw the ball with one hand over the shoulder and hit the target	0	5	25	145	96.67
3	Run-up: Last 4 steps, straight run-up and full run-up coordination	0	5	25	145	96.67
4	Coordinate the final effort and balance with and without the ball	0	3	27	147	98.00
5	Run-up 9-11 steps to perform the entire technique	0	15	15	135	90.00
6	Practice throwing competition	0	20	10	130	86.67
Physical Development Activity Group						
1	Kneeling forward solid ball throw	0	22	8	128	85.33
2	Final effort position to throw the stuffed ball forward.	15	10	5	110	73.33

3	Throw the ball with both hands behind the head combined with a jump	18	8	4	106	70.67
Game Activity Group						
1	Throw Beyond the Mark	0	12	18	138	92.00
2	Throw Sandbag	0	12	18	138	92.00
3	Throw Long and Hit	0	20	10	130	86.67
4	Run Fast Pass	0	22	8	128	85.33
5	Kneel Throw	16	12	2	106	70.67
6	Throw at Target	0	22	8	128	85.33
7	Hoop Throw	0	20	10	130	86.67
Middle Distance Running Topic						
Motor Skills Supplemental Activities Group						
1	Additional movements: front kick, thigh lift, heel to butt, heel to heel, side step, cross step, arm swing in place.	0	10	20	140	93.33
2	Start at the beginning of the circle and the straight line, then accelerate according to the prescribed distance	10	10	10	120	80.00
3	Run to accelerate on the straight line and curve	0	17	13	133	88.67
4	Run to accelerate 10-15 m to the finish line	0	16	14	134	89.33
5	Start and accelerate, then run at an average speed according to the prescribed distance	0	10	20	140	93.33
Physical Development Activity Group						
1	Five-minute endurance run	10	20	0	110	73.33
2	Run at variable speeds for distances of 200-400m	15	15	0	105	70.00
3	Run at below-average speed for the prescribed distance	0	15	15	135	90.00
Game Activity Group						
1	Who Can Run Longer	0	15	15	135	90.00
2	Running Following the Flag	0	20	10	130	86.67
3	Running Naturally	5	25	0	115	76.67
4	Relay Over Obstacles	0	10	20	140	93.33
5	Ring Relay	15	15	0	105	70.00

3.3 Evaluation of the effectiveness of physical activities to develop physical capacity for students of some secondary schools in Ho Chi Minh City

To determine the effectiveness of physical activities in developing the physical capacity of students of some secondary schools in Ho Chi Minh City, the study was evaluated based on two factors: physical development and motor skills of students in experimental schools. The specific content of the factors to evaluate the effectiveness of the activities is presented in the following sections:

3.3.1 On physical strength

After the experimental period, the physical strength of grade 6 students of some secondary schools in Ho Chi Minh City is shown in the following table:

Table 2: Physical development of grade 6 students

School	Test	Male			Female		
		First	Last	W%	First	Last	W%
Chu Văn An	Lying on the back and doing sit-ups (t/30 s)	15.48	17.65	13.01	14.70	15.78	7.09
	Long jump in place (cm)	147.96	151.65	2.44	148.19	152.11	2.54
	30m high start run (s)	6.53	6.42	-1.68	7.27	7.09	-2.64
	Running at will for 5 minutes (m)	713.48	746.96	4.48	661.11	678.52	2.69
Trần Quốc Toản 1	Lying on the back and doing sit-ups (t/30 s)	16.19	18.49	13.29	11.21	13.07	15.30
	Long jump in place (cm)	156.71	169.52	7.81	127.69	144.86	12.63
	30m high start run (s)	5.66	5.42	-4.40	6.89	6.62	-3.91
	Running at will for 5 minutes (m)	688.57	716.67	3.94	552.76	574.48	3.86
Hồng Bàng	Lying on the back and doing sit-ups (t/30 s)	15.42	1773	13.83	13.50	14.93	10.16
	Long jump in place (cm)	151.93	161.87	6.31	135.45	147.28	8.63
	30m high start run (s)	6.12	6.01	-1.83	6.98	6.74	-3.60
	Running at will for 5 minutes (m)	716.00	740.67	3.46	640.00	663.00	3.58
Hoàng Diệu	Lying on the back and doing sit-ups (t/30 s)	15.76	17.59	11.19	13.45	14.69	9.19
	Long jump in place (cm)	152.41	162.17	6.11	132.34	144.55	9.08
	30m high start run (s)	5.94	5.76	-3.27	7.06	6.82	-3.63
	Running at will for 5 minutes (m)	711.09	741.30	4.18	632.76	655.17	3.55
Việt Mỹ	Lying on the back and doing sit-ups (t/30 s)	16.14	17.38	7.30	13.36	14.82	10.30
	Long jump in place (cm)	147.22	162.00	9.67	124.86	141.41	12.63
	30m high start run (s)	5.90	5.77	-2.19	6.75	6.47	-4.27
	Running at will for 5 minutes (m)	713.78	740.54	3.67	671.36	700.91	4.29

According to the results of the table above, it shows that:

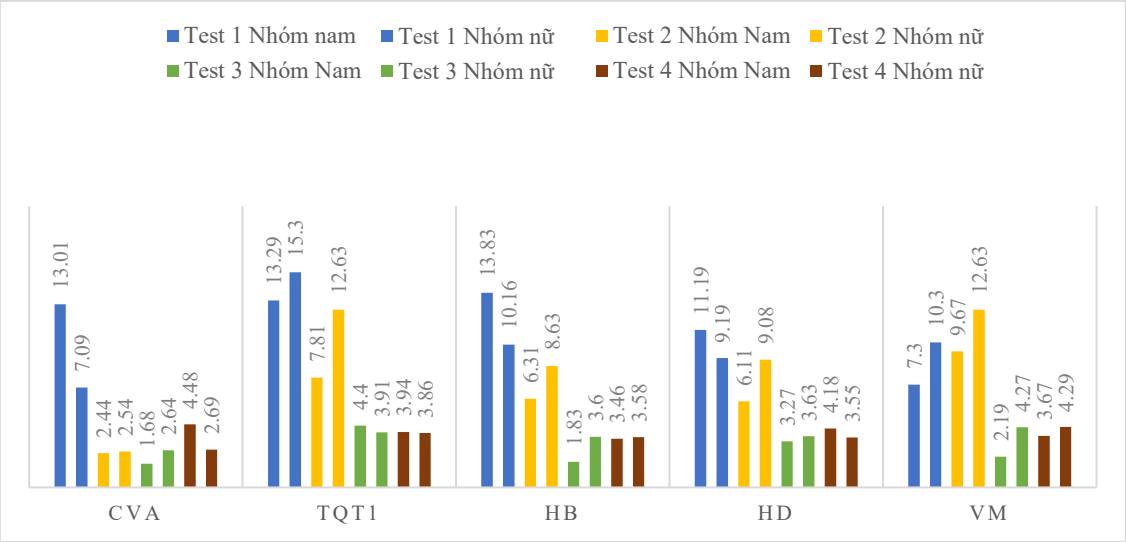
- **For students at Chu Van An Secondary School:** over the experimental period, most of the achievements in the evaluation criteria have increased, and this growth is statistically significant when the t calculated in all tests > t table (t table for male

group = 2.07, t table for female group = 2.06). The growth rate is at 1.68 - 13.01% for the male group and 2.64 - 7.09% for the female group; in which, the best growth rate of both male and female groups is the sit-up test with 13.01 and 7.09%, the least growth rate of the male group is the 30m high start running test with 1.68% and the on-the-spot long jump of the female group with 2.54%.

- **For students at Tran Quoc Toan 1 Secondary School:** over the experimental period, most of the achievements in the evaluation criteria have increased, and this growth is statistically significant when the t calculated in all tests > t table (t table of male group = 2.07, t table of female group = 2.06). The growth rate is at 3.94 - 13.29% for the male group and 3.86 - 15.3% for the female group; in which the best growth rate of both male and female groups is the sit-up test with 13.29 and 15.3%, respectively; the least growth rate of male and female groups is the 5-minute running test at will with 3.94% and 3.86%.
- **For students at Hong Bang Secondary School:** over the experimental period, most of the achievements in the evaluation criteria have increased, and this growth is statistically significant when the t calculated in all tests > t table (t table of male group = 2.02, t table of female group = 2.02). The growth rate is at 1.83 - 13.83% for the male group and 3.60 - 10.16% for the female group; in which, the best growth rate of both male and female groups is the sit-up test with 13.83 and 10.16%, the least growth rate of the male group is the 30m high start run test with 1.83% and the 5-minute run at will of the female group with 3.58%.
- **For students at Hoang Dieu Secondary School:** over the experimental period, most of the achievements in the evaluation criteria have increased, and this growth is statistically significant when the t calculated in all tests > t table (t table of the male group = 2.01, t table of the female group = 2.02). The growth rate is at 3.27 - 11.19% for the male group and 3.55 - 9.19% for the female group; in which, the best growth rate of both the male and female groups is the sit-up test with 11.19 and 9.19%, the least growth rate of the male group is the 30m high start run test with 3.27% and the 5-minute run depending on the strength of the female group with 3.55%.
- **For students at the Viet My School:** over the experimental period, most of the achievements in the evaluation criteria have increased, and this growth is statistically significant when the t calculated in all tests > t table (t table for the male group = 2.03, t table for the female group = 2.08). The growth rate is 2.19 - 9.67% for the male group and 4.27 - 12.63% for the female group; in which, the best growth rate of both the male and female groups is the on-the-spot long jump test with 9.67 and 12.63%, the least growth rate of both the male and female groups is the 30m high start run test with 2.19% and 4.27%.

The physical growth of 6th grade students of some secondary schools in Ho Chi Minh City is shown in the following chart 1:

Chart 1: Physical growth rate of 6th grade students (W%)



Note: Test 1: Lying on back, sit-ups; Test 2: Long jump in place; Test 3: Running 30m high start; Test 4: Running for 5 minutes depending on strength.
CVA: Chu Van An school; TQT1: Tran Quoc Toan 1 school; HB: Hong Bang school; HD: Hoang Dieu school; VM: Viet My school.

3.3.2 On motor skills

The evaluation criteria of the 3 Athletics topics include: Short-distance running, Ball throwing, Middle-distance running; the study recorded the development of motor skills of male and female students in 5 experimental schools, determined at 3 levels: Not achieved (N), Achieved (A) and Good (G).

The numbers are listed in Table 2 as follows:

Table 3: Development of motor skills of 6th grade students after the experiment

School	Test	Male						Female					
		First			Last			First			Last		
		N	A	G	N	A	G	N	A	G	N	A	G
Chu Văn An	Middle-distance running	4	19	0	2	21	0	8	19	0	0	22	5
	Sprint	5	18	0	0	5	18	10	17	0	0	13	14
	Throwing ball	0	5	18	0	4	19	8	19	0	0	9	18
Trần Quốc Toản 1	Middle-distance running	22	20	0	6	32	4	16	13	0	6	20	3
	Sprint	11	31	0	0	23	19	9	20	0	0	18	11
	Throwing ball	12	18	12	0	22	20	7	21	1	0	19	10
Hồng Bàng	Middle-distance running	24	21	0	6	36	3	25	15	0	0	36	4
	Sprint	8	37	0	0	26	19	14	26	0	0	20	20
	Throwing ball	11	20	14	0	24	21	14	25	1	0	20	20
Hoàng Diệu	Middle-distance running	29	16	1	9	33	4	13	16	0	0	24	5
	Sprint	7	39	0	0	27	19	11	18	0	0	14	15
	Throwing ball	14	17	15	0	25	21	13	15	1	0	18	11
Việt Mỹ	Middle-distance running	28	9	0	0	34	3	19	3	0	0	20	2
	Sprint	6	31	0	0	33	4	10	12	0	0	14	8
	Throwing ball	24	13	0	0	34	3	13	9	0	0	15	7

Based on the results of the table above, the study found that:

- **For students at Chu Van An Secondary School:** the students' motor skills have changed and improved significantly, as evidenced by the number of students achieving the Achieved and Good levels. After the experiment, with the CLTB running topic, the male group has no students achieving the Good level but the female group has 5 students achieving the Good level; with the CLN running topic, the number of male students achieving the Good level is outstanding, 18 students, while the female group has 14 students; with the Ball Throwing topic, 19 male students and 18 female students achieved the Good level.
- **For students at Tran Quoc Toan 1 Secondary School:** the students' motor skills have changed and improved significantly as evidenced by the number of students achieving the Achieved and Good levels. After the experiment, with the CLTB running topic, the male group has 4 students and the female group has 3 students achieving the Good level; With the CLN running theme, the number of male students who achieved the Good level was 19, while the female group achieved 11; with the Ball Throwing theme, 20 male students and 10 female students achieved the Good level.
- **With students at Hong Bang Secondary School:** the motor skills of the students changed and improved significantly, as evidenced by the number of students who achieved the Good and Good levels. After the experiment, with the CLTB running theme, the male group had 3 students and the female group had 4 students who achieved the Good level; with the CLN running theme, the number of male students who achieved the Good level was 19, while the female group achieved 20; with the Ball Throwing theme, 21 male students and 20 female students achieved the Good level.
- **With students at Hoang Dieu Secondary School:** the motor skills of the students changed and improved significantly as evidenced by the number of students who achieved the Good and Good levels. After the experiment, with the CLTB running theme, the male group had 4 students and the female group had 5 students reaching the Good level; with the CLN running theme, the number of male students reaching the Good level was 19 students, while the female group reached 15 students; with the Ball Throwing theme, 21 male students and 11 female students reached the Good level.
- **With students at the Vietnam-America School:** the students' motor skills changed and improved significantly, as evidenced by the number of students reaching the Achieved and Good levels. After the experiment, with the CLTB running theme, the male group had 3 students and the female group had 2 students reaching the Good level; with the CLN running theme, the number of male students reaching the Good level was 4 students, while the female group reached 8 students; with the Ball Throwing theme, 3 male students and 7 female students reached the Good level.

4. Conclusion

The experimental results of motor activities have brought positive effects in developing physical abilities for students of some secondary schools in Ho Chi Minh City. Specifically, the physical fitness and motor skills indicators increased respectively for both male and female students. The physical fitness growth was from 1.68 -13.29% for males and from 2.54 - 12.63% for females. Regarding motor skills, there was a clear shift between the levels of achievement and good, accounting for a higher proportion than before the experiment. Through the above results, it can be concluded that the motor activities used have a positive effect on the development of physical capacity for students in some secondary schools in Ho Chi Minh City.

Conflict of Interest Statement
The authors declare no conflicts of interest.

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