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Assessment of Experimental Results Application of the Physical Exercise System with Instruments for Kids Kindly 4-5 Years Old in Hanoi City, Vietnam

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Abstract

One of the outstanding results of the preschool education sector in Hanoi in the 2016-2020 period is a comprehensive improvement in school size, class, and quality of child care and education, meeting parents' need to send their children, and at the same time mobilize more and more children of school age. However, physical education for preschool children still faces many difficulties and limitations; especially ancillary works, equipment for children's physical training and sports activities is still lacking and have not met the set requirements. Within the framework of this article, the author evaluates the experimental results of the application of a system of physical exercises for preschool children 4-5 years old in Hanoi City, Vietnam. On that basis, specific goals are discussed for the research subjects, to contribute to improving the physical health of 4-5-year-old preschool in the coming time in Hanoi city.

***Keywords*— Results; Exercise system; Experimental; Hanoi; Vietnam.**

I. INTRODUCTION

In modern life, physical exercise with equipment (gymnastics) is one of the basic means of harmonious physical development that is not only attractive to adults but also to children, being invested by many families. go to the gym from preschool age. The system of physical exercises with equipment for children has been formed and developed in many countries around the world for over 20 years now [9].

Gymnastics as well as physical activities from an early age, not only have the effect of exercising but also help stimulate the simultaneous development of both hemispheres of the brain. This is something that few smart tools or toys can do. However, for children up to 3-6 years old, to maintain regular practice, besides the guidance of the teachers at the center, parents also need to pay attention to learn to have the right method, to help their children. easy to absorb lessons in class and bring children comfort when participating in exercises.

First of all, all exercise activities must be conducted regularly, with a reasonable schedule. According to gym instructors, at a young age, regular exercise with a schedule not only brings positive effects but also contributes to building healthy habits in daily life through exercise and sports. for the baby later. At this age, it is recommended to let your baby exercise in the gym as a way to practice sports skills to help develop physically [9].

II. RESEARCH LITERATURE REVIEW

2.1. New approach to sports for children in the world

In some developed countries, they have begun to gradually develop standards for sports training conditions for preschool children, such as There must be a gym to ensure warmth in winter and cool in summer. summer, the temperature is stable; Gyms or play areas must be safe, clean, and dust-free to avoid infection during children's movement and breathing...[1], [2], [5].

“Sport” today has been viewed and evaluated from many different angles, in which sport for everyone in the world is changing rapidly. Each country in the world has a different view and assessment of the influence of "sports

for all" on the policy of national sports development [2], [5], [10].

Recently, Singapore launched a training program for preschool teachers and coaches to provide basic motor skills to 18-month-old children; The British government has introduced several major reforms in investment in sports, in which two major issues stand out: the first is to promote the development of "sport for all", "sports for all". the masses" and secondly to attract young people's participation in sports activities;

The New Zealand government during the 1980s - 1990s implemented a sports program called "KiwiSports", which attracted the participation of children aged 9-12. This program was developed with the participation of children aged 9-12. The aim is to increase the number of children participating in outdoor activities such as swimming, picnicking, cycling… The results of this Program were summarized in 1996, with 78% of New Zealanders participating in it. outdoor sports activities have increased significantly, including for both adults and children;

China, with its excellent achievements in the recent Olympic arena, has a way of classifying the concept of sport into two different fields. The first is that "sports" often focuses on the development of high-performance sports, and competitive sports; and secondly, "physical activities" often focus on physical training and sports activities, mass activities, health training, and serving social groups.

Malaysia proposed in 1985, with the main goal of focusing on developing sports for all Malaysians, to become a healthy, united, highly disciplined nation, where people have many opportunities to participate participate in physical activities and let Malaysia's sports industry develop stronger and stronger.

Canada and many other countries associate fitness and health education with personal and social development; Develop a variety of elective physical training and sports content during intra-curricular hours and develop voluntary extracurricular sports activities [4].

In Norway in 2012, the Multi-Factor Model (increasing physical activity, reducing autistic behaviors, and improving meals) with the measure: 10 minutes of weekly exercise increases the sense of exercise and stimulates exercise. practice including time at school and free time. Implementation: 20 months (program name is Adolescent Health (implemented at 2165 schools aged 11) in the curriculum for the physical development of children.

In the Netherlands with the FATaintPHAT model 883 kindergarten students participated. Exercises increase physical activity for students, reduce autism and improve good eating habits. 15 minutes for each lesson, 8 lessons in 10 weeks to help preschoolers improve their health and develop physically.

In Belgium in the 2006-2007 school year, there were 1589 kindergarten and primary school students participating in a program to strengthen advocacy activities for children. The program adds extra-curricular physical activities for students to develop physically.

Spain in 2013 implemented a program of 2062 children 3-5 years old. Supplementing the curriculum related to eating habits, types of physical exercise for preschool children to develop stature and physical strength for children.

In Germany, a study of 1119 children aged 7-8 years old participated in a program consisting of 29 classroom sessions, 2 training sessions per day, and 6 home exercises, with regulated TV viewing time and carbonated drink consumption to enhance physical development for children's physical development [10].

In Japan, since kindergarten, sports competitions take place for children from 24 months. Fitness expert Len Almond at the British Heart Association's National Physical Training Center said that young children should go to the gym from a young age, but should not do weights because football players exercise vigorously at their age. As a child, he experienced pain in his hind legs [10].

2.2. Related research projects in our country

Le Anh Tho (1995), Research using some folk movement games in physical education for 4-year-old preschool children; Includes folk games for physical development for preschoolers. Post-experiment results show that post-experiment has a good influence on the physical development of preschool children [8].

Dang Hong Phuong (2000); Research on teaching methods of basic motor exercises for older preschool children (5-6 years old); The research results have developed four groups of methods, including Developing new motor concepts, reviewing old motor concepts, perfecting motor concepts and checking and evaluating the performance of motor exercises. The book has had a good impact on the physical and mental development of preschool children (5 - 6 years old) [6].

Lam Thi Tuyet Thuy (2007); Research on the physical development of preschool children in some central provinces. Research results, the author has identified tests to assess the fitness level of preschool children with 5 criteria and proposed measures that can improve the effectiveness of physical development for preschool children in some provinces and regions. The middle is: Increase General activities with learning

purposes. physical education into 2 activities in 1 week with the method of organizing children to practice in many small groups (teams), applying the form of rotation, increasing the use of motor games, and folk games to develop physical fitness for children [9].

Nguyen Thi Ha (2019), Research on innovation of the Physical Education program in training students majoring in Early Childhood Education at Hanoi National University of Education 2 towards improving career capacity, through the integration of 2 chapters program in the direction of taking the profession as a motivation to improve the effectiveness of PE, taking the content of PE to combine with equipping students with knowledge and skills to implement PE activities for preschool children, overcoming the limitations of two general PE subject programs and PE subjects belong to the professional knowledge block, contributing to improving professional capacity for students specializing in early childhood education [3].

Nguyen Hung Dung (2021), Research on the physical development of 5-6-year-old preschool children in Dong Thap province, has developed a plan to apply 30 games into teaching practice. Post-experimental results show that 30 games had a better impact on the performance of the physical assessment tests of the experimental group than the control group after the experiment.

The research works on preschool physical education, by domestic and foreign authors, are a valuable source of material, a theoretical and practical basis oriented towards solving the research tasks and objectives. topic.

III. RESEARCH METHODS

3.1. Methods of analyzing and synthesizing documents

This is the method that most of the research works use to systematize the knowledge related to the research area. In the process of researching, collecting, synthesizing, and analyzing documents, documents of the Party and State, legal documents of the sector on the work of physical education in schools; books, journals, scientific documents, and research results of domestic and foreign authors and scientists related to physical education in schools. The main sources of materials are collected from the libraries of the Universities of Sport and Sport and the Universities of Sport and Education, the Library of the Institute of Sports Science, and the National Library of Vietnam.

3.2. Methods of Interview and Investigation

An interview is a form of conversation, the questions must be prepared in advance and asked in a certain order, and the answers need to be publicly recorded.

In interviews, people use modern technical means such as cameras, recorders, or video recorders to retain research materials.

Investigation of 556 preschool children 4-5 years old in Hanoi city (282 boys and 274 girls), monitored and evaluated for their physical development before the experiment and after the experiment according to 10 established criteria and tests, including Height (cm); Weight (kg); Balance standing on 1 foot (seconds); Sitting with the torso folded (cm); Jump in place (cm); One-handed long-throw (m); Long throw with 2 hands (m); Hit and catch the ball with 2 hands (balls/min); Toss the ball with 2 hands into the bucket (fruit); Run as fast as 10m (seconds).

3.3. Pedagogical observation method

Is a method of perceiving research objects in the process of education and reformation without affecting that process, or in other words, a purposeful approach to a certain educational phenomenon to acquire and collect specific data, documents, and events that characterize the evolution of that phenomenon.

Within the scope of the topic, we have directly observed the process of PE at preschools and studied the current plan, content, and methods of the current preschool PE program.

In the process of observing and approaching the research object of the topic, the pedagogical processes have been recorded from both sides: the teacher and the learner to serve as a basis for determining the factors and conditions that ensure the teaching and learning process. application of physical exercises to research subjects.

The selected subjects for pedagogical observation are preschool teachers, physical education teachers (teachers), and preschool children in preschools in Hanoi city, through basic observation (observation with the program). schedule, plan, take notes); Internal observation (observation when the teacher directly teaches during PE class); Public observation (observation when learners and teachers know there is an observer and the observed content).

3.4. Methods of biomedical examination

Including key methods such as (1) Blood pressure; (2) Pulse pulse; (3) Standing height (cm); (4) Weight (kg); (5) BMI index; (6) Single reflex- Body reaction speed (ms)

3.5. Experimental method of pedagogy

The pedagogical experiment is a method of actively and systematically studying an educational phenomenon to determine the relationship between educational impact and educational phenomenon that needs to be studied under controlled conditions. The experimental method allows researchers to deeply understand the nature of the educational phenomenon to discover new things, but this is a method that requires elaborate preparation in terms of both theories as well as work and site technical equipment during the experiment.

3.6. Statistical Mathematical Methods

The information and parameters collected during the implementation of the topic will be processed and analyzed by mathematical and statistical methods, ensuring the scientific, reasonable, and logical quality of the entire content of the study. rescue.

4. Research results and discussion

4.1. Evaluation of physical development before the experiment

For 4-year-old children: the results of the pre-experiment physical development test of children in the experimental and control groups showed similar development in both boys and girls (p>0.05); presented in Table 1.

For 5-year-old children: pre-experiment test results, average achievement values of physical development indicators of children between the experimental group and control group were not different, presented in Table 1. Table 2.

Thus, the physical development indicators of the experimental group and the control group did not have a significant difference in the initial level, in other words, the pre-experiment physical parameters of the two groups were similar. equivalent. This is the basis for conducting pedagogical experiments and comparing and evaluating the effectiveness of the application of the tested TCVD exercises in practice, through practice.

The results of the physical development assessment of 4-5-year-old preschools in Hanoi-TTN city are presented in Table 1-2.

Table 1: Results of physical development assessment test 4-year-old preschool children in Hanoi city – TTN

No	Expense, test	$\overline{X}$	δ	$\overline{X}$	δ	t	p
Boys		**NTN (n=61)**		**NĐC (n= 63)**			
1	Height (cm)	105.79	3.08	105.59	3.06	1.77	>0.05
2	Weight (kg)	17.81	2.50	17.11	2.75	1.66	>0.05
3	Balance standing on 1 foot (seconds)	6.75	1.74	7.12	2.8	0.89	>0.05
4	Sitting folded body (cm)	7.48	1.74	7.83	1.72	1.13	>0.05
5	Thrust in place (cm)	45.66	16.8	45.45	19.16	0.06	>0.05
6	One-handed long-throw (m)	2.39	0.77	2.2	0.82	1.33	>0.05
7	Long throw with 2 hands (m)	1.77	0.31	1.62	0.57	1.84	>0.05
8	Smash and catch the ball with 2 hands (ball/1 minute)	14.62	3.11	14.44	3.22	0.32	>0.05
9	Toss the ball with 2 hands into the bucket (fruit)	1.57	1.55	1.92	1.66	1.21	>0.05
10	Run fast 10m (seconds)	3.88	0.29	3.94	0.42	0.93	>0.05
Girls		**NTN (n=58)**		**NĐC (n= 62)**			
1	Height (cm)	105.67	2.26	105.18	2.46	1.91	>0.05
2	Weight (kg)	17.28	2.34	17.39	2.66	1.80	>0.05
3	Balance standing on 1 foot (seconds)	5.19	1.94	5.34	2.44	0.37	>0.05

4	Sitting folded body (cm)	7.48	1.72	7.88	1.74	1.27	>0.05
5	Thrust in place (cm)	52.72	14.93	53.77	9.39	0.46	>0.05
6	One-handed long-throw (m)	2.36	0.84	2.26	0.82	0.66	>0.05
7	Long throw with 2 hands (m)	1.80	0.31	1.87	0.28	1.30	>0.05
8	Smash and catch the ball with 2 hands (ball/1 minute)	13.08	5.22	14.52	2.34	1.93	>0.05
9	Toss the ball with 2 hands into the bucket (fruit)	1.92	1.66	2.03	1.56	0.37	>0.05
10	Run fast 10m (seconds)	4.26	0.92	4.01	0.41	1.90	>0.05

(Source: Survey results from the thesis)

Table 2: Results of Development Assessment the physical condition of 5-year-old preschool children in Hanoi city-TTN

No	**Expense, test**	$\overline{X}$	**δ**	$\overline{X}$	**δ**	**t**	**p**
Boys		**NTN (n=77)**		**NĐC (n= 81)**			
1	Height (cm)	106.81	3.67	107.33	3.26	1.17	**>0.05**
2	Weight (kg)	18.24	2.17	17.95	2.02	1.37	**>0.01**
3	Balance standing on 1 foot (seconds)	431.58	216.47	404.44	155.65	0.8	>0.05
4	Sitting folded body (cm)	5.93	1.6	5.39	2	1.67	>0.05
5	Thrust in place (cm)	7.34	1.84	7.75	1.73	1.28	>0.05
6	One-handed long-throw (m)	49.01	16.28	65.28	18.8	5.16	**<0.01**
7	Long throw with 2 hands (m)	2.47	0.84	2.22	0.8	1.69	>0.05
8	Smash and catch the ball with 2 hands (ball/1 minute)	1.83	0.38	1.86	0.28	0.5	>0.05
9	Toss the ball with 2 hands into the bucket (fruit)	15.23	3.06	14.61	2.8	1.17	>0.05
10	Run fast 10m (seconds)	2.3	1.5	2.08	1.6	0.79	>0.05
Girls		**NTN (n=80)**		**NĐC (n= 74)**			
1	Height (cm)	107.60	3.53	107.36	2.94	9.5	**>0.05**
2	Weight (kg)	18.46	2.05	18.83	2.75	13.26	**>0.05**
3	Balance standing on 1 foot (seconds)	441.22	219.99	410.34	146.87	0.9	>0.05
4	Sitting folded body (cm)	5.29	1.63	4.89	1.22	1.51	>0.05
5	Thrust in place (cm)	7.28	1.88	7.68	1.74	1.21	>0.05
6	One-handed long-throw (m)	49.47	16.23	61.42	19.62	3.64	**<0.01**
7	Long throw with 2 hands (m)	2.49	0.86	2.21	0.8	1.84	>0.05
8	Smash and catch the ball with 2 hands (ball/1 minute)	1.82	0.39	1.86	0.29	0.63	>0.05
9	Toss the ball with 2 hands into the bucket (fruit)	14.45	3.04	13.72	2.67	1.39	>0.05
10	Run fast 10m (seconds)	2.29	1.5	1.87	1.45	1.56	>0.05

(Source: Survey results from the thesis)

4.2. Evaluation of physical development after an experiment

For 4-year-olds

The results of the post-experiment physical development test of the experimental and control groups, presented in Table 3, show that:

In boys: The mean values of height and weight of the experimental group compared with the control group were similar (t calculated 1.77-1.64; with p > 0.05); 08 average values of pedagogical-physical parameters are Balance standing on 1 leg; sitting with the body folded, turning on the spot; long throw with 1 hand, long throw with 2 hands; hit and catch the ball with 2 hands; toss the ball with 2 hands into the bucket, run 10m fast; The experimental group was significantly higher than the control group. The experimental group was higher than the control group (t calculated 2.54-6.31; with p<0.05-0.01).

In female children: The mean values of height and weight of the experimental group compared with the control group were similar (t calculated 1.78-1.54; with p > 0.05-0.01); 06 average values of fitness parameters: Balance standing on 1 leg; far off in place; long throw with 2 hands; hit and catch the ball with 2 hands; toss the ball with 2 hands into the bucket, run 10m fast; The experimental group was significantly higher than the control group (calculated 1.99-6.59; p<0.05-0.01);

02 average value of the parameter is the sitting folded body; throw with one hand, the difference is not significant (calculated 0.77-1.65; with p > 0.05).

For children 5 years old

The results of the post-experiment physical development test of the experimental and control groups, presented in Table 4, show that:

In boys: The mean values of height and weight of the experimental group compared with the control group were similar (t calculated 1.35-1.81; with p > 0.05); 05 average values of pedagogical-physical parameters are: Balance standing on 1 leg; sitting with the body folded, turning on the spot; throw with one hand; toss the ball with 2 hands into the bucket; the experimental group was significantly higher than the control group (t calculated 2.80-7.88; with p<0.05-0.01); 03 parameters are long throw with 2 hands; hit and catch the ball with 2 hands; 10m fast, the achievement of the control group was not significant (t calculated 0.04-1.77; with p>0.05)

In female children: The mean values of height and weight of the experimental group compared with the control group were similar (t calculated 1.33-1.86; with p > 0.05-0.01); 04 average values of fitness parameters: sitting flexed body; throw with one hand; long throw with 2 hands; toss the ball with 2 hands into the bucket; The experimental group was significantly higher than the control group (calculated 1.97-4.53; with p<0.05-0.01); 04 average values of fitness parameters are: Balance standing on 1 leg; far off in place; hit and catch the ball with 2 hands; 10m fast run; the difference was not significant (calculated 0.55-1.81; with p > 0.05).

Thus, the post-experiment results show that the physical fitness of the experimental group at both ages boys and girls is better than the control group, statistically significant with t>t, at the threshold of certainty. pressure p<0.05-0.01. The absence of differences in morphological parameters (height, weight) between the groups is consistent with biological laws; because height growth is not entirely due to genes, but also depends on many factors such as nutrition, environment, psychology, and movement. In particular, genetic factors determine about 23% of a person's height and this factor cannot be changed. Nutrition plays the most important role in determining height, accounting for about 32%. Next is the factor of sports training, which determines 22% of a person's height. The rest are environmental factors such as sleep, air, noise, emotional states of happiness, sadness, anxiety, stress, etc.

The results of the physical development assessment of 4-5-year-old preschools in Hanoi city-STN are presented in Table 3-4.

Table 3: Results of the development assessment test the physical condition of 4-year-old preschool children in Hanoi city-STN

No	**Expense, test**	**NTN**		**NĐC**		t	P
		n=61		**n=63**			
		$\overline{X}$	δ	$\overline{X}$	δ		
Boys							
1	Height (cm)	107.59	2.58	107.38	2.77	1.77	**>0.05**
2	Weight (kg)	19.81	2.76	19.60	3.01	1.64	**>0.05**

3	Balance standing on 1 foot (seconds)	4.65	1.66	4.11	1.27	2.54	**<0.05**
4	Sitting folded body (cm)	8.53	1.59	7.91	1.65	2.66	**<0.01**
5	Thrust in place (cm)	63.23	21.75	55.2	21.32	2.6	**<0.01**
6	One-handed long-throw (m)	2.77	0.92	2.22	0.81	4.44	**<0.01**
7	Long throw with 2 hands (m)	2.14	0.45	1.73	0.46	6.31	**<0.01**
8	Smash and catch the ball with 2 hands (ball/1 minute)	18.51	3.22	15.39	3.48	6.51	**<0.01**
9	Toss the ball with 2 hands into the bucket (fruit)	2.7	1.33	1.72	1.65	4.6	**<0.01**
10	Run fast 10m (seconds)	3.67	0.27	3.83	0.42	3.20	**<0.01**
Girls		**n = 58**		**n = 62**			
1	Height (cm)	107.93	2.53	107.37	2.72	1.78	**>0.05**
2	Weight (kg)	19.68	2.79	19.68	2.99	1.54	**>0.01**
3	Balance standing on 1 foot (seconds)	4.25	1.77	4.67	1.34	1.99	**<0.05**
4	Sitting folded body (cm)	4.72	1.77	4.48	1.75	0.77	**>0.05**
5	Thrust in place (cm)	8.54	1.95	7.73	1.69	2.51	**<0.05**
6	One-handed long-throw (m)	61.05	21.86	54.53	22.72	1.65	**>0.05**
7	Long throw with 2 hands (m)	2.85	1.03	2.04	0.77	5.04	**<0.01**
8	Smash and catch the ball with 2 hands (ball/1 minute)	2.05	0.47	1.8	0.39	3.3	**<0.01**
9	Toss the ball with 2 hands into the bucket (fruit)	18.4	2.82	15.27	2.59	6.59	**<0.01**
10	Run fast 10m (seconds)	2.92	1.67	1.87	1.37	3.95	**<0.01**

(Source: Survey results from the thesis)

Table 4: Results of Development Assessment the physical condition of 5-year-old preschool children in Hanoi city-STN

No	**Expense, test**	$\overline{X}$	**δ**	$\overline{X}$	**δ**	**t**	**p**
Boys		**NTN (n=77)**		**NĐC (n= 81)**			
1	Height (cm)	109.35	3.62	109.15	3.09	1.81	**>0.01**
2	Weight (kg)	20.24	1.99	21.75	2.65	1.35	**>0.01**
3	Balance standing on 1 leg (gy)	324.6	129.62	430.04	188.36	3.65	**<0.01**
4	Sitting folded body (cm)	7.02	1.51	4.95	1.41	7.88	**<0.01**
5	Thrust in place (cm)	9.74	3.45	8.35	1.74	2.8	**<0.01**
6	One-handed long-throw (m)	65.38	21.47	51.05	14.85	4.3	**<0.01**
7	Long throw with 2 hands (m)	2.75	0.76	2.58	0.86	1.17	>0.05
8	Hit and catch the ball with two hands (ball/1 minute)	2.65	0.74	2.69	0.81	0.29	>0.05
9	Toss the ball with 2 hands into the	17.6	2.09	15.66	2.51	4.69	**<0.01**

	bucket (fruit)						
10	Run fast 10m (seconds)	2.90	1.19	2.91	1.6	0.04	>0.05
Girls		**NTN (n=80)**		**NĐC (n= 74)**			
1	Height (cm)	109.51	3.67	109.79	2.94	1.33	**>0.01**
2	Weight (kg)	20.63	2.17	20.83	2.75	1.86	**>0.05**
3	Balance standing on 1 leg (gy)	431.58	216.47	410.34	146.87	0.71	>0.05
4	Sitting folded body (cm)	5.93	1.6	4.89	1.22	4.53	**<0.01**
5	Thrust in place (cm)	7.34	1.84	7.68	1.74	1.18	>0.05
6	One-handed long-throw (m)	49.01	16.28	61.42	19.62	4.28	**<0.01**
7	Long throw with 2 hands (m)	2.47	0.84	2.21	0.8	1.97	**<0.05**
8	Hit and catch the ball with two hands (ball/1 minute)	1.83	0.38	1.86	0.29	0.55	>0.05
9	Toss the ball with 2 hands into the bucket (fruit)	15.23	3.06	13.72	2.67	3.26	**<0.01**
10	Run fast 10m (seconds)	2.30	1.5	1.87	1.45	1.81	>0.05

(Source: Survey results from the thesis)

4.3. Results of physical growth rate according to each index of the experimental group and control group

Assessing the physical growth and development of children after the experiment is to consider the manifestation of the relationship according to the rules, and objective reality, through longitudinal monitoring (self-collation) of the subjects' growth indicators. study.

For 4-year-olds

The results of the post-experiment physical growth compared with the pre-experiment of the experimental group and the control group are presented in Table 3.30-3.31 and Chart 3.1-3.2.

For NTN:

In boys: The growth rate of physical indexes ranges from 26% to 5.81%, with a t from 2.52 to 3.89; $p < 0.05$; The average physical growth is 3.84%.

In girls: The growth rate of physical indicators is from 2.24% to 7.29%, with t from 2.45 to 4.63; $p < 0.05$. Average physical growth of 4.54%.

For investors:

In boys: The growth rate of physical indicators is from 0.52%-2.09%, with t from 0.45-1.28; $p > 0.05$; Average physical growth of 1.01%.In female students: The growth rate of the physical fitness index ranges from 0.4%-3.01%, with t from 0.45-0.97; $p > 0.05$ (only in-situ distal $p<0.05$). Average physical growth of 1.63%.

For children 5 years old

The results of physical growth after the experiment compared to before the experiment of the children of the experimental group and the control group are presented in Table 3.32-3.33 and Chart 3.3-3.4.

For NTN:

In boys: The growth rate of physical indexes ranges from 26% to 5.81%, with a t from 2.52 to 3.89; $p < 0.05$; The average physical growth is 3.84%.

In girls: The growth rate of physical indicators is from 2.24% to 7.29%, with t from 2.45 to 4.63; $p < 0.05$. Average physical growth of 4.54%.

For investors:

In boys: The growth rate of physical indicators is from 0.52%-2.09%, with t from 0.45-1.28; $p > 0.05$; Average physical growth of 1.01%.

In girls: The growth rate of the physical fitness index ranges from 0.4% to 3.01%, with t from 0.45 to 0.97; $p > 0.05$ (only in-situ distal $p<0.05$). Average physical growth of 1.63%.

Thus, the test results of STN compared with TTN in both Men and Women of adolescents had a clear change in physical strength ($p<0.05$), the average growth rate was 3.84% in Men and 4.54% in Women.

Meanwhile, there was no obvious change in the physical strength of the elderly ($p>0.05$) and the average growth rate was only 1.01% in men and 1.63% in women. The growth rate of NTN is 1.5 times higher than that of the average resident.

This proves that physical exercise exercises applied in practice have had a good impact on the indicators of physical fitness of adolescents, in the direction of positivity, stimulating demand, stimulating interest in physical training and development. children's initiative, creativity, and physical training.

Table 5: Physical growth results of 5-year-old preschool children in Hanoi city – Adolescents

No	Expense, test	$\overline{X}$	δ	$\overline{X}$	δ	t	p	W%
Boys (n=77)		**TTN**		**STN**				
1	Height (cm)	106.81	3.67	109.35	3.62	2.69	**<0.05**	2.39
2	Weight (kg)	18.24	2.17	20.24	1.99	2.29	<0.05	2.48
3	Balance standing on 1 leg (gy)	5.93	1.60	7.02	1.51	4.38	**<0.01**	4.21
4	Sitting folded body (cm)	7.34	1.84	9.74	3.45	5.42	**<0.01**	7.03
5	Thrust in place (cm)	49.01	16.28	65.38	21.47	5.37	**<0.01**	7.16
6	One-handed long-throw (m)	2.47	0.84	2.75	0.76	2.18	**<0.05**	2.68
7	Long throw with 2 hands (m)	1.83	0.38	2.65	0.74	8.71	**<0.01**	9.15
8	Hit and catch the ball with two hands (ball/1 minute)	15.23	3.06	17.6	2.09	5.65	**<0.01**	3.61
9	Toss the ball with 2 hands into the bucket (fruit)	2.3	1.50	2.9	1.19	2.77	**<0.01**	5.77
10	Run fast 10m (seconds)	3.75	0.27	3.46	0.31	6.23	**<0.01**	2.01
Girls (n= 80)		**TTN**		**STN**				
1	Height (cm)	107.60	3.53	109.51	3.67	2.27	<0.05	1.97
2	Weight (kg)	18.46	2.05	20.83	2.17	2.70	>0.05	2.63
3	Balance standing on 1 leg (gy)	5.29	1.63	7.09	1.71	6.73	**<0.01**	7.27
4	Sitting folded body (cm)	7.28	1.88	9.43	3.30	5.0	**<0.01**	6.43
5	Thrust in place (cm)	49.47	16.23	66.42	20.11	5.79	**<0.01**	7.31
6	One-handed long-throw (m)	2.49	0.86	3.18	1.07	4.44	**<0.01**	6.08
7	Long throw with 2 hands (m)	1.82	0.39	2.79	1.27	6.45	**<0.01**	10.52
8	Hit and catch the ball with two hands (ball/1 minute)	14.45	3.04	17.4	2.32	6.81	**<0.01**	4.63
9	Toss the ball with 2 hands into the bucket (fruit)	2.29	1.50	2.79	1.46	2.11	**<0.05**	4.92
10	Run fast 10m (seconds)	3.76	0.27	3.66	0.24	1.44	**>0.05**	0.67

(Source: Survey results from the thesis)

Table 6: Results of physical growth of 5-year-old preschool children in Hanoi – NDC

No	Expense, test	$\overline{X}$	δ	$\overline{X}$	δ	t	p	W%
Boys (n = 81)		**TTN**		**STN**				
1	Height (cm)	107.33	3.26	109.15	3.09	1.99	**<0.05**	2.26
2	Weight (kg)	17.95	2.17	21.75	2.65	2.15	**<0.05**	2.09
3	Balance standing on 1 leg (gy)	5.39	2	4.95	1.41	1.61	>0.05	2.13
4	Sitting folded body (cm)	7.75	1.73	8.35	1.74	2.19	**<0.05**	1.86
5	Thrust in place (cm)	65.28	18.8	51.05	14.85	5.31	**<0.01**	6.12

6	One-handed long-throw (m)	2.22	0.8	2.58	0.86	2.74	**<0.01**	3.75
7	Long throw with 2 hands (m)	1.86	0.28	2.69	0.81	8.66	**<0.01**	9.12
8	Hit and catch the ball with two hands (ball/1 minute)	14.61	2.8	15.66	2.51	2.5	**<0.05**	1.73
9	Toss the ball with 2 hands into the bucket (fruit)	2.08	1.6	2.91	1.6	3.28	**<0.01**	8.32
10	Run fast 10m (seconds)	3.64	0.29	3.62	0.29	0.44	>0.05	0.14
Girls (n = 74)		**TTN**		**STN**				
1	Height (cm)	107.36	2.94	109.79	2.94	1.01	**>0.01**	0.34
2	Weight (kg)	18.46	2.05	20.83	2.75	1.71	>0.05	0.83
3	Balance standing on 1 leg (gy)	4.89	1.22	5.96	2.01	3.97	**<0.01**	4.93
4	Sitting folded body (cm)	7.68	1.74	8.37	2.27	2.10	**<0.05**	2.15
5	Thrust in place (cm)	61.42	19.62	65.18	17.3	1.25	>0.05	1.48
6	One-handed long-throw (m)	2.21	0.8	2.44	0.76	1.82	>0.05	2.47
7	Long throw with 2 hands (m)	1.86	0.29	1.94	0.35	1.53	>0.05	1.05
8	Hit and catch the ball with two hands (ball/1 minute)	13.72	2.67	14.53	3.65	1.56	>0.05	1.43
9	Toss the ball with 2 hands into the bucket (fruit)	1.87	1.45	2.41	1.44	2.30	**<0.05**	6.31
10	Run fast 10m (seconds)	3.64	0.29	3.6	0.27	0.88	>0.05	0.28

(Source: Survey results from the thesis)

4.4. Results of physical development of 4-5-year-old preschool children in Hanoi city according to classification

For 4-year-olds

Results of physical classification of adolescents and young adults compared with the standard of physical development classification of 4-year-old preschool children in Hanoi

The results of the physical classification of 4-year-old adolescents and young adults compared with the pre-experimental classification standard showed that:

In boys:

NTN, Good grade 14.7%; Fair grade 19.6%; Average grade 57.3%; Weak type 13.1%; Poor grade 11.9%. NDC, Good grade 15.8%; Fair grade 15.7%; Medium grade 55.5%; Weak type 11.1%; Poor grade 9.5%.

In girls:

NTN, Good grade 24.1%; Fair grade 2.4%; Medium grade 50.0%; Weak type 1.7%; Poor grade 3.2%. NDC, Good grade 14.5%; Fair grade 12.9%; Average grade 46.7%; Weak type 6.4%; Poor grade 6.4%.

Thus, in both boys and girls, the rate is similar ($p>0.05$).

The results of the physical classification of 4-year-old adolescents and young adults compared with the post-experiment classification standard, show that:

In boys:

NTN, Good 22.9%; Fair grade 21.3%; Average grade 39.3%; Weak type 4.9%; Poor grade 3.2%. NDC, Good grade 19.0%; Fair grade 17.4%; Average grade 49.2%; Weak type 7.9%; Poor grade 6.3%.

In girls:

NTN, Good grade 24.1%; Fair grade 22.4%; Medium grade 50.0%; Weak type 1.7%; Poor grade 1.7%. NDC, Good grade 17.7%; Fair grade 24.7%; Average grade 46.7%; Weak type 4.8%; Poor grade 3.2%.

Thus, in both boys and girls 4 years old, after the experiment, the rate of achievement was much higher than that of the experimental group ($p<0.05$).

For 5-year-olds:

The results of the physical classification of adolescents and young adults compared with the standard of physical development of 5-year-old preschool children in Hanoi show that:

The results of the physical classification of 5-year-old adolescents and young adults compared with the pre-experimental classification standard, show that:

In boys:

NTN, Good 13.58%; Fair grade 18.52%; Average grade 41.98%; Weak type 4.94%; Poor grade 3.7%. NDC, Good grade 19.4%; Fair grade 25.37%; Average grade 61.19%; Weak type 8.96%; Poor grade 5.97%.

In girls:

NTN, Good 16.25%; Fair grade 21.25%; Medium grade 41.25%; Weak type 12.5%; Poor grade 8.75%. NDC, Good 17.57%; Fair grade 18.92%; Medium grade 41.89%; Weak type 14.86%; Poor grade 6.76%.

Thus, in both boys and girls, the rate is similar ($p>0.05$).

The results of the physical classification of 4-year-old adolescents and young adults compared with the post-experimental classification standards show that:

In boys:

NTN, Good 29.63%; Fair grade 25.93%; Average grade 23.46%; Weak type 2.47%; Poor grade 1.23%. NDC, Good 14.93%; Fair grade 28.75%; Average grade 27.5%; Weak type 5.0%; Poor grade 2.5%.

In girls:

NTN, Good 36.25%; Fair grade 28.75%; Average grade 27.5%; Weak type 5.0%; Poor grade 2.5%. NDC, Good 14.86%; Fair grade 24.3%; Average grade 41.8%; Weak type 13.5%; Poor grade 5.9%.

Thus, in both boys and girls, after the experiment, the rate of achievement was much higher than that of the experimental group ($p<0.05$).

4.5. The results of the classification of comprehensive physical development according to the transcript of 4-5-year-old preschool children in Hanoi city

The results of classifying the comprehensive physical development of preschool children 4-5 years old in Hanoi city according to the scoreboard, presented in Table 7-8

For 4-year-olds

The results of the comprehensive physical classification of adolescents and young adults compared with the Composite Score, presented in Table 7 show that:

In boys:

NTN scores on a 100-point scale are: From 90-100 points 19.7%; from 70-80 points 52.5%; from 50-60 points 19.7%; from 30-40 points 4.92%; from 10-20 points 3.28%. The NDCs, respectively, on a 100-point scale are: From 90-100 points 12.7%; from 70-80 points 33.3%; from 50-60 points 25.4%; from 30 to 22.2%; from 10-20 points 6.35%.

In girls:

NTN scores on a 100-point scale, respectively: From 90-100 points 23.9%; from 70-80 points 36.2%; from 50-60 points 24.1%; from 30-40 points 6.9%; from 10-20 points 3.45%. The NDCs, respectively, on a 100-point scale are: From 90-100 points 16.1%; from 70-80 points 17.7%; from 50-60 points 43.6%; from 30-4- score 12.9%; from 10-20 points 9.68%.

The results calculated according to the composite score confirmed that the physical development of 4-year-old preschool boys and girls in Hanoi NTN was better than that of the NC, with $p<0.05$.

For children 5 years old

The results of the comprehensive physical classification of adolescents and young adults show that:

In boys:

NTN scores respectively on a 100-point scale: From 90-100 points 27.3%; from 70-80 points 46.8%; from 50-60 points 18.2%; from 30-40 points 6.49%; from 10-20 points 1.3%. The NDCs, respectively, on a 100-point scale are: From 90-100 points 19.8%; from 70-80 points 33.3%; from 50-60 points 14.8%; from 30-40 points 17.3%; from 10-20 points 14.8%.

In girls:

NTN scores on a 100-point scale, respectively: From 90-100 points 33.3%; from 70-80 points 24.4%; from 50-60 points 29.5%; from 30-40 points 10.3%; from 10-20 points 2.56%. NDCs, respectively, on a 100-point scale are: From 90-100 points 18.5%; from 70-80 points 23.5%; from 50-60 points 18.5%; from 30-40 points 33.3%; from 10-20 points 6.17%.

The results calculated according to the composite score confirmed that the physical development of 5-year-old preschool boys and girls in Hanoi city was much better than that of the non-school children, with $p<0.05$.

Thus, the physical development of 4-5-year-old preschool children in Hanoi city of the experimental group after experiencing the physical activity exercises has tended to be better than the control group, as demonstrated through classification and scores. synthesized, showed that the physical development of the experimental group was generally higher than that of the control group; statistically significant at the threshold of probability $p < 0.05$. This further affirms that the effectiveness of physical activity exercises has a good impact on the physical indicators of the experimental group; in a positive direction, stimulating the need to arouse interest in physical training for 4-5-year-old children in Hanoi city through the experience of physical education exercises.

Table 7: Comparative results according to the ranking table Physical development of 4-year-old Kindergarten Hanoi children (%)

Boys	**NTN (n=61)**		**NĐC (n=63)**		χ^2_{count}	χ^2_{board}	**p**
Good 9-10	12	19.7%	8	12.7%	11.41	9.49	<0.05
Good 7-8	32	52.5%	21	33.3%			
Average 5-6	12	19.7%	16	25.4%			
Weak 3-4	3	4.92%	14	22.2%			
Poor 1-2	2	3.28%	4	6.35%			
Girls	**NTN (n=58)**		**NĐC (n=62)**				
Good 9-10	17	29.3%	10	16.1%	12.28	9.49	<0.05
Good 7-8	21	36.2%	11	17.7%			
Average 5-6	14	24.1%	27	43.6%			
Weak 3-4	4	6.9%	8	12.9%			
Poor 1-2	2	3.45%	6	9.68%			

(Source: Survey results from the thesis)

Table 8: Comparative results by grading table physical development of 5-year-old preschool children in Hanoi city (%)

Boys	**NTN (n=77)**		**NĐC (n=81)**		χ^2_{count}	χ^2_{board}	**p**
Good 9-10	21	27.3%	16	19.8%	15.59	9.49	<0.05
Good 7-8	36	46.8%	27	33.3%			
Average 5-6	14	18.2%	12	14.8%			
Weak 3-4	5	6.49%	14	17.3%			
Poor 1-2	1	1.3%	12	14.8%			
Girls	**NTN (n=78)**		**NĐC (n=80)**				
Good 9-10	26	33.3%	15	18.5%	16.18	9.49	<0.05
Good 7-8	19	24.4%	19	23.5%			
Average 5-6	23	29.5%	15	18.5%			
Weak 3-4	8	10.3%	27	33.3%			
Poor 1-2	2	2.56%	5	6.17%			

(Source: Survey results from the thesis)

4.6. Survey results of administrators and preschool teachers

Preschool administrators and teachers have a particularly important position in the educational cause of the Party, as a bridge connecting the national culture and humanity with the reproduction of that culture in the child. young. Kindergarten teachers' activities include child care activities; activities of teaching and educating children; professional self-improvement activities and social activities.

In this day and age, teachers not only have the function of imparting knowledge but also have a positive impact on the formation of children's personalities. That is also the difference in professional activities of preschool teachers compared to other types of teachers in the national education system.

Within the framework of the thesis topic, administrators and preschool teachers at pedagogical experimental establishments, are the subjects who always accompany and help effectively. Their opinions are considered an important and objective channel for the process of implementing the exercise system for preschool children 4-5 years old in Hanoi. Managers and preschool teachers directly monitor, the process of approaching and giving the system of exercises for preschool children in Hanoi 4-5 years old allow the following comments:

Intuitive: Made with movements, through direct motor actions to make it easier for children to visualize (mean 4.07). Self-discipline and positivity: By guiding the child through imitation, simulation of motor movements, and helping the child to have a sense of self-discipline, positivity, and focus (mean 4.53).

Develop children's ability to think for themselves: by letting them experience reality; create space for children to create and experience themselves to reveal their personality and character (mean 4.43). The exercises are suitable for the child's psychophysiology, age, gender, health, and level (mean 4.13). The only goal is to help children develop comprehensively both physically and intellectually (mean 4-40).

Fit and suitable to the characteristics of each child in terms of physical strength, personality, and personal problems of each person, applying appropriate exercises and methods of movement (mean 4.17). Reinforcement and enhancement: Performed regularly to form conditioned motor reflexes (mean 4.27). From a social perspective, physical activity for children also has a positive meaning as a useful playground and a healthy living environment; helps children use their free time rationally (mean 4.27). Ensure safety: Help limit risks during practice with safe and suitable equipment and yards for children (mean 4.30). With Cronbach's Alpha reliability >0.8

IV. CONCLUSION

To improve knowledge in organizing educational activities for the cognitive and physical development of students, physical education for preschool children has been focused, especially in schools in the capital and other cities. In big cities, teachers of preschools regularly enhance their professional learning and fostering.

Through the training program, teachers improve their skills and have a more realistic and comprehensive view of preschool physical education. The courses not only stop at technical knowledge of physical education but also expand knowledge of science and child psychological development, helping teachers have ways to train children suitable for each condition and level. age and psychology. Therefore, for children's physical activities to achieve high efficiency, it is extremely necessary to take care of and improve the quality and qualifications of teachers and guides.

It can be said that, for children of preschool age, helping children develop harmonious physical aspects, thereby developing personality, and fostering aesthetic feelings and social skills for children is not only the task of the family. school but also need the help of parents. At the same time, it is necessary to have methods and lesson plans suitable for each age group. Thus, setting goals for physical development for preschool children is effective and brings practical value.

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