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## Applying physical games in extracurricular lessons in order to develop physical health for the primary students in the northeastern mountainous area of Vietnam

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### Abstract

By regular scientific research methods, the paper has selected 30 physical games in accordance with the characteristics, interests of learners and specific conditions of the school. Using the selected physical games as a means of organizing extracurricular activities in primary schools is aimed at helping students to play and organize the games at home on their own; thereby, contributing to physical development for students at primary school in particular and improving the effectiveness of physical education of provinces in the Northeastern mountainous region in general.

**Keywords:** Physical games, sports, primary students, physical development, Northeastern region

### Introduction

#### Rationale

Primary school is the first stage in the general education system, with the goal "... to form the initial foundations for the long-term and true development of morality, intellect, physical health and aesthetic appearance, and other basic skills for students to continue secondary school later on" [1]. For students, especially at primary school, recreation plays an important role in mental and physical development. They will accumulate knowledge, life skills, and character formation through leisure activities.

Physical games are considered as a means of physical education, a conscious activity, in order to achieve the expected goals. Physical games are made up of two factors: entertainment and mental satisfaction; education and physical education contributing to the formation of morality, will, courage, solidarity, and the development of necessary qualities, skills and techniques for life.

Preliminary survey at primary schools in the Northeastern mountainous region shows that physical education is one of the contents that have been paid much attention. All schools have implemented the physical education program under the regulation of the Ministry of Education and Training for the regular class hours. However, the teaching quality is low; the methods and content are poor, and the amount of mobilization is not high, which is not attractive enough to encourage students to practice voluntarily. On the other hand, the extracurricular activities that actively support the academic performance, helping students acquire knowledge and skills in a convenient way, and contributing to the development of their health and fitness for students are not taken into consideration seriously. The forms and methods of organizing extracurricular activities in those schools are still poor; therefore, the physical capacity of primary school students is low. Especially, the organization of physical games in extracurricular programs has not been paid much attention; or it is only done in formal way and students are not comfortable when playing their favorite games. Hence, the use physical games during extracurricular hours for the students at primary schools in the Northeastern mountainous region for better physical development is very necessary and practical.

### Research Method

In the research process, the researchers used the following research methods: Document

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analysis and synthesis; Interview, seminar; Pedagogical observation; Pedagogical examination; Pedagogical experiment; and Mathematical statistics.

## Research findings and discussions

### 1. Selecting games for extracurricular activities for elementary school students in the Northeastern mountainous region of Viet Nam

To ensure the scientific basis for the selection of physical games, we interviewed 125 people including: 32 experts and 93 experienced teachers at primary schools in Thai Nguyen and Bac Kan provinces. In order to focus on choosing physical games, the researchers have suggested appropriate and realistic one, in accordance with physiological characteristics, the actual conditions of elementary schools in the Northeastern region, and appropriate with the competence of teachers, students, and existing teaching conditions. The suggested games ensure the harmonious development of typical physical characteristics of students such as health, strength, endurance and ability to coordinate movement, especially guiding students to play games which they can organize play by their own at home<sup>[3]</sup>.

After two rounds of interview, the results of selecting physical games of experts and teachers were quite similar, which was reflected by the value of Wilcoxon index:  $T > W\alpha$  (with  $n > 20$  and  $\alpha = 0.05$ )<sup>[4]</sup>. Thereby, the authors have selected 30 games of 5 groups of skill training to develop physical health for elementary school students in the Northeast mountainous region with the selection rate of 70% or more. Specifically:

**Group 1:** including games training the ingenuity, balance and orientation in space: “Tâng cầu”; Following orders; Cock fighting; Hula hoop; Hide and seek; Who is better.

**Group 2:** including games that train the ability of walking, running and agility: Relay; Running with pinwheel; Win the victory flag; Dragon and snake; “Thả đĩa baba”; Ready for order.

**Group 3:** including games to practice jumping skills and develop leg strength: Relay; Leapfrog; Rope skipping; Hopscotch; Avoid the ball; Chicken chasing toad.

**Group 4:** including games to practice throwing, carrying, pulling skills and develop chest strength: Horse riding; Throwing; Throw the target; Who pulls well; Scissor saws. Chanting while sawing wood

**Group 5:** including games to train coordination skills and develop endurance: Who is faster and more skillful; Pass fast, jump quickly; “Chồng đồng chồng đê”; Planting flower buds; Transferring objects; Jumping down from above.

### 2. Application of selected physical games in extracurricular hours for elementary school students in the Northeastern mountainous region of Viet Nam.

#### 2.1 Building experimental process

Based on the teaching plan and the content of the subject program, physical games were selected and arranged to apply in teaching practice. In each lesson, the game in each age group are organized in the form of entertaining, competing with each other and high sense of teamwork. All students were asked to participate in each training session. The games were built and implemented under the principle of rotation so that teams after finishing one game could continue to move to another. Games in each training session were conducted from the basic to the diverse range, from those training reflex,

orientation and balance in space to those that develop strength, endurance and coordination (specifically, games of orientation, balance → running → jumping → throwing → coordination). The process of repeating the playing rounds will help students train and develop common endurance.

\* Forms of conducting experiments: The research results on the use of physical games for elementary school students in the Northeastern mountainous region show that the form of organizing after-school and extracurricular activities of the Physical education subject are the two most dominant forms in terms of theory and organizational practice. These are also two forms of experimental organization of physical games that researchers have chosen and used in practice at primary schools<sup>[2]</sup>.

#### 2.2 Experimental organization

- Experimental method: Using an experimental method of parallel comparison
- Experimental period: The pedagogical experiment process was conducted in 9 months (corresponding to 1 academic year).
- Experimental subjects: The researchers experimentally organized the selected games on 194 grade 4 elementary school students of Ky Phu and Dong Doan Khue Primary Schools in Dai Tu District, Thai Nguyen Province. Experimental subjects were divided into 2 groups: experimental group, and control group. Students in these 2 groups had the same conditions of: level of cognitive knowledge, physical competency; quantity; Material facilities and means of organizing activities, sources of documents; teachers are people who have experience in organizing educational activities, having knowledge and understanding about physical activities in education for students.
- To be specific:
  - + Experimental group: Including 107 elementary school students (57 boys and 50 girls) at grade 4 of the 2 above primary schools. These subjects participated in the Physical education program under the regulation of the Ministry of Education and Training and were allowed to use games included in the research in their after-school and extra-curricular activities.
  - + The control group: Including 87 elementary school students (50 boys and 37 girls) at grade 4 of the 2 above primary schools. These subjects participated in regular Physical Education program under the regulation of the Ministry of Education and Training.
- Experimental period: The games were conducted in extracurricular hours. Specifically in after-school activities (2 periods per week as prescribed by the Ministry of Education and Training) and in extracurricular activities (2 periods conducted every Friday afternoons).
- Testing and evaluation: Testing was conducted before and after the experiment. The content of testing and evaluating the use of 12 indicators listed in the people's physical investigation program in 2001 of the Institute of Physical Education and Sports<sup>[5]</sup> to check the research subjects in both experimental and control groups; thereby, calculating the growth in achievement of those indicators before the experiment.

The experimental process is detailed in Table 1.

**Table 1:** Process of teaching selected physical games for students

Games	Month								
	1	2	3	4	5	6	7	8	9
Tâng cầu	x		x	x		x	x		
Following orders		x			x			x	x
Cock fighting	x		x	x		x	x		
Hula hoop		x			x			x	x
Hide and seek	x			x		x	x		x
Who is better		x	x		x			x	
Relay	x			x		x	x		x
Running with pinwheel		x	x		x			x	
Win the victory flag	x		x	x			x		x
Dragon and snake		x		x		x		x	
Ready for order	x		x		x		x	x	
Thả đĩa ba ba		x		x	x	x			x
Hopping relay	x		x	x			x		x
Leapfrog		x			x	x		x	
Rope skipping	x		x	x			x		x
Hopscotch		x			x	x		x	
Chicken chasing toad		x		x		x		x	x
Avoid the ball	x		x		x		x		
Horse riding	x			x		x	x		x
Throwing		x	x		x			x	
Throw the target	x			x		x	x		x
Who pulls well		x		x	x			x	
Toss the ball to each other	x		x		x		x		x
Chanting while sawing wood		x	x			x		x	
Who is faster and more skillful	x		x			x	x		x
Pass fast, jump quickly		x		x	x			x	
Chông đống chông đẽ	x		x		x		x		x
Planting flower buds		x		x		x		x	
Transferring objects	x		x		x	x		x	
Jumping down from above		x		x			x		x

### 2.3 Assessing the experiment results

Before the experiment, researchers conducted physical tests of the students in experimental group. The test results showed that before the experiment, the physical capacity of the two groups were similar, there was no statistically significant difference. The result of the grouping was completely objective.

After 9 months of experiment, the researchers conducted physical tests of students in the control and experimental groups. The results showed that after 1 year of experimental study, the physical capacity of the experimental group was

much higher than that of the control group at the probability threshold  $P < 0.05$ . This proves that the physical games that were selected and applied for the elementary school students Grade 4 were highly effective in physical development for the research subjects.

In order to better understand the difference in physical fitness of experimental and control groups, the researchers proceeded to calculate the growth rate of physical strength between male and female students in the control and experimental groups. The results are presented in table 2, table 3, chart 1, and chart 2.

**Table 2:** Physical growth of male students at grade 4 after experiment

Indicators	Control group (n = 50)			Experimental group (n = 57)		
	$\bar{X}_1$	$\bar{X}_2$	W	$\bar{X}_1$	$\bar{X}_2$	W
Standing height (cm)	13.00	138.28	3.52	133.00	142.49	6.89
Weight (kg)	29.54	32.44	9.36	30.59	35.94	16.10
Cardiac function	12.58	12.00	4.70	12.66	10.48	18.80
Quetelet index	221.37	247.88	11.30	229.52	251.85	9.28
BMI index	16.63	17.82	6.91	17.26	17.67	2.35
Run 30m XPC (s)	6.57	6.36	3.20	6.66	5.96	11.10
Long jump stand (cm)	145.50	155.48	6.63	144.49	171.47	17.10
Flexibility (cm)	6.20	6.58	5.95	6.07	8.10	28.70
Lie on your back with belly bend (time/30s)	16.02	18.34	13.5	15.70	21.21	29.90
Force squeeze of preferred hand (kg)	16.55	18.03	8.56	16.45	20.15	20.20
Shuttle run 4x10m (s)	12.42	12.03	3.20	12.46	11.06	11.90
Free running for 5 mins (m)	786.30	806.06	2.48	780.89	861.68	9.84

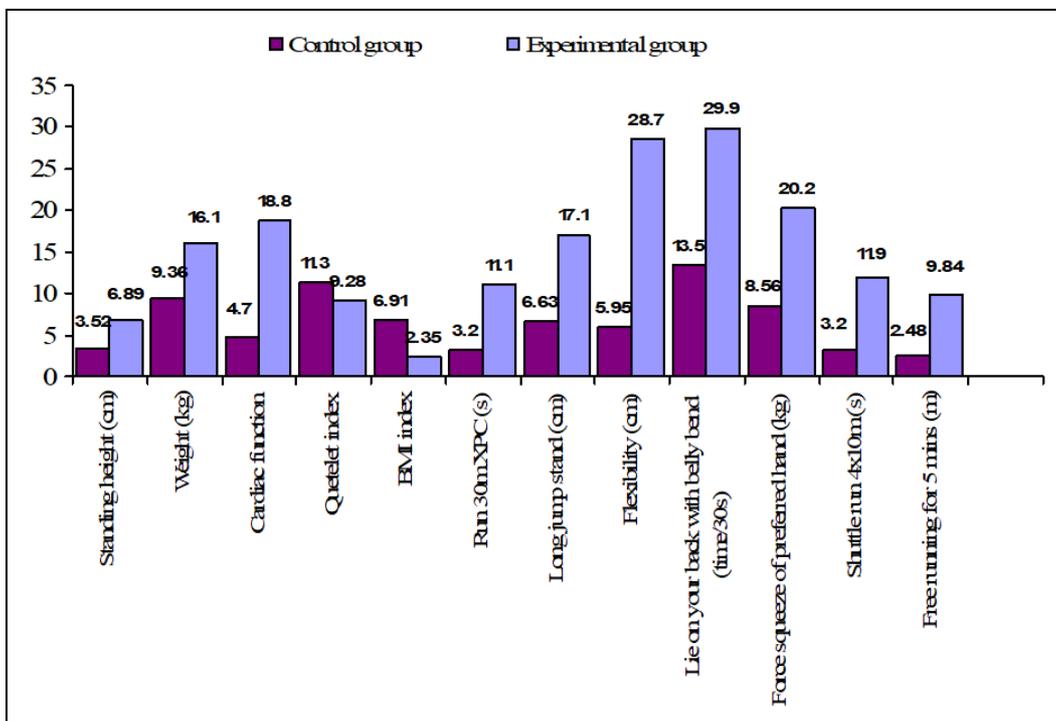


Chart 1: Comparison of physical growth of male students at grade 4 after experiment

Table 3: Physical growth of female students at grade 4 after experiment

Indicators	Control group (n=37)			Experimental group (n=50)		
	$\bar{X}_1$	$\bar{X}_2$	W	$\bar{X}_1$	$\bar{X}_2$	W
Standing height (cm)	132.00	137.22	3.88	131.32	141.70	7.60
Weight (kg)	28.49	32.62	13.50	28.20	34.78	20.90
Cardiac function	13.08	12.85	1.80	13.13	11.35	14.50
Quetelet index	216.70	238.09	9.41	214.28	245.50	13.6
BMI index	16.52	17.39	5.13	16.33	17.36	6.11
Run 30m XPC (s)	7.01	6.86	2.20	7.06	6.49	8.41
Long jump stand (cm)	140.16	151.40	7.71	139.48	161.48	14.60
Flexibility (cm)	6.26	6.97	10.70	6.13	7.65	22.10
Lie on your back with belly bend (time/30s)	13.89	14.62	5.12	14.02	17.96	24.60
Force squeeze of preferred hand (kg)	15.07	17.50	14.90	15.17	18.52	19.90
Shuttle run 4x10m (s)	13.56	13.00	4.20	13.60	11.82	14.00
Free running for 5 mins (m)	739.14	752.62	1.81	730.42	800.18	9.12

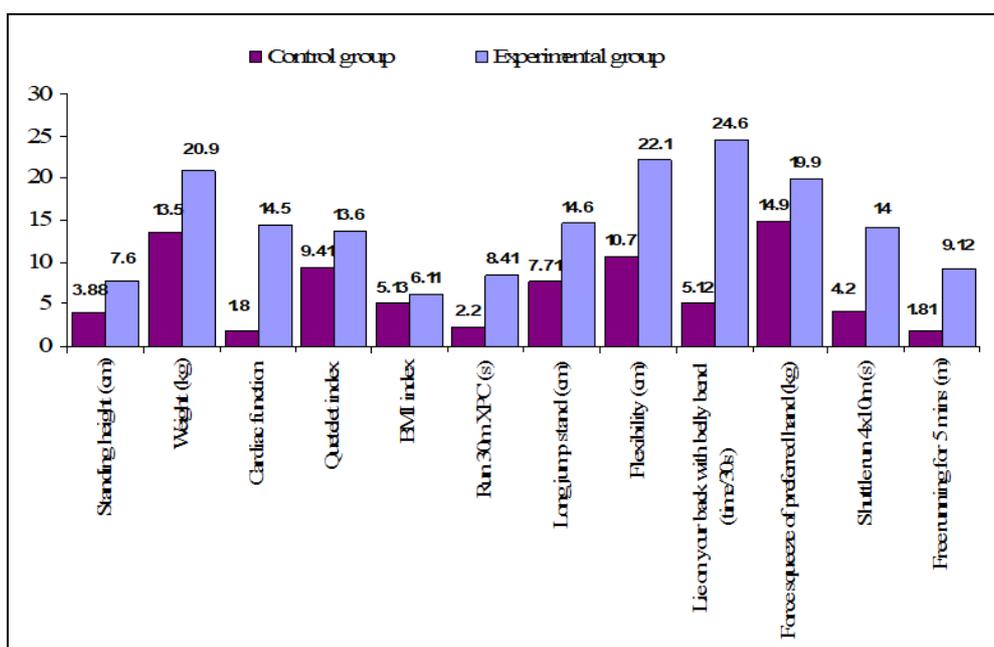


Chart 1: Comparison of physical growth of female students at grade 4 after experiment

**Results of tables 2 and 3 show that**

After 1 year of experimenting, all physical indicators of the two research groups grew. In particular, the experimental group has much higher indexes than the control group. Specifically:

- For male students: 10/12 physical indicators of the experimental group increased significantly compared to the control group. In particular, the target “Lie on your back with belly bend” increased the highest to 29.90%.
- For female students: 12/12 physical indicators of the experimental group increased significantly compared to the control group. In particular, the target “Lie on your back with belly bend” increased the highest to 24.60%.
- The growth of physical indicators of the control and experimental groups can be clearly seen through charts 1 and 2.

**Conclusion**

The research results have selected 30 games for physical development for elementary school students in the Northeastern region, with initial application of these games in reality and evaluating the effectiveness. The application results show that the physical games have been highly effective in physical development for the Northeastern mountainous elementary school students. The experimental group has shown a far higher growth rate in the physical evaluation indicators than that of the control group.

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