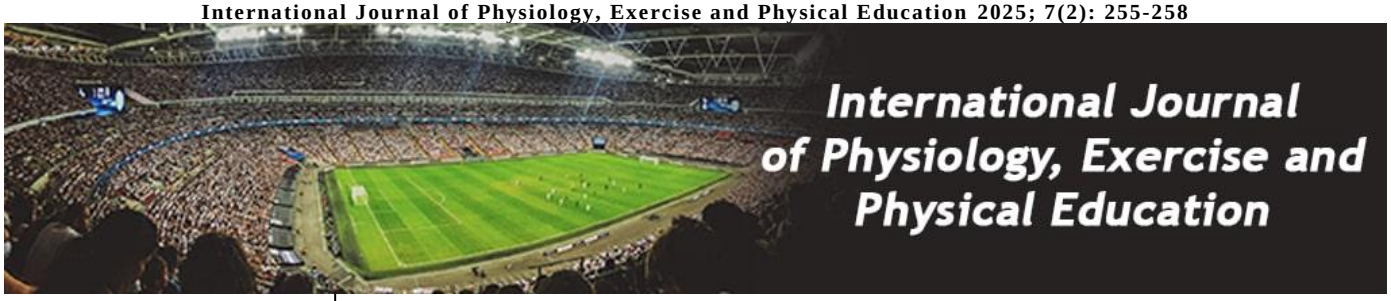

ISSN Print: 2664-7249
ISSN Online: 2664-7257
Impact Factor (RJIF): 8.3
IJPEPE 2025; 7(2): 255-258
www.physicaleducationjournals.com
Received: 21-07-2025
Accepted: 25-08-2025

Đao Thi Hoa Quynh
Faculty of Physical Education, Thai Nguyen University of Education, Thai Nguyen University, Vietnam

Tran Minh Khuong
Faculty of Physical Education, Thai Nguyen University of Education, Thai Nguyen University, Vietnam

Tran Thi Tu
Faculty of Physical Education, Thai Nguyen University of Education, Thai Nguyen University, Vietnam

Corresponding Author:
Đao Thi Hoa Quynh
Faculty of Physical Education, Thai Nguyen University of Education, Thai Nguyen University, Vietnam

Developing criteria for assessing the physical development of 5-6-year-old children at May 19 Kindergarden, Thai Nguyen City, Vietnam

Đao Thi Hoa Quynh, Tran Minh Khuong and Tran Thi Tu

DOI: https://www.doi.org/10.33545/26647249.2025.v7.i2d.225

Abstract
This study focuses on developing a set of criteria for assessing the physical development of 5-6-year-old children at May 19 Kindergarten, Thai Nguyen City, Vietnam. Based on an analysis of theoretical foundations related to physical development in early childhood and a review of both domestic and international assessment frameworks, the research team conducted surveys, selected, and adjusted indicators to fit the practical context. The study employed a mixed-methods approach, combining qualitative and quantitative techniques, including classroom observations, interviews with teachers and physical education experts, and physical fitness tests administered to 60 preschool children. The findings identified a system of evaluation criteria consisting of four main groups: (1) strength, (2) speed, (3) endurance, and (4) dexterity, each accompanied by specific indicators that are easy to apply in preschool settings. This study provides a scientific basis for teachers and administrators in developing physical education plans, while also paving the way for broader application and future research across other kindergartens in Vietnam.

Keywords: Physical development, 5-6-year-old children, preschool, evaluation criteria, physical education

1. Introduction
Physical development plays a crucial role in shaping and strengthening children's health, motor abilities, and overall development during the preschool years [1]. Studies have shown that the age of 5-6 represents a critical period for developing fundamental physical qualities such as strength, speed, endurance, and dexterity, which lay the foundation for later learning and play activities [2, 3].

In Vietnam, the Early Childhood Education Program issued by the Ministry of Education and Training identifies physical education as one of the core domains contributing to the enhancement of care, nurturing, and educational quality for young children [4]. However, the assessment of children's physical development in many preschools still relies primarily on teachers' qualitative observations or on general evaluation scales that are not entirely suited to local conditions [5]. This creates difficulties in monitoring children's physical progress, designing appropriate movement activities, and implementing timely interventions.

Meanwhile, in many countries, systems of physical fitness criteria and testing tools for children have been widely researched and applied for instance, the PREFIT battery for preschoolers in Europe and the FITNESSGRAM in the United States [6, 7]. These instruments have proven effective in reflecting children's physical status, yet they cannot be fully adopted in Vietnam due to differences in population characteristics, environmental conditions, and educational contexts [8].

Therefore, developing a set of criteria to assess the physical development of Vietnamese preschool children is highly necessary. In response to this need, the present study was conducted at May 19 Kindergarten in Thai Nguyen City with the objective of constructing and validating a set of physical development assessment criteria for 5-6-year-old children. The findings are expected to provide a scientific and practical tool that contributes to improving the effectiveness of physical education, care, and management in preschools.

2. Research Methods

The study employed the following research methods:

Document analysis and synthesis: Relevant theoretical foundations, academic articles, research projects, and statistical data were reviewed, analyzed, synthesized, and inherited to establish the theoretical basis for this study.

Data collection: A survey was conducted with 60 children aged 5-6 years at May 19 Kindergarten in Thai Nguyen City, Vietnam. The questionnaire was designed to collect information regarding the current status of physical development among these children.

Statistical analysis: The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 26, a specialized software tool commonly used for data analysis in the social sciences.

3. Research Result

3.1. Identifying Evaluation Criteria for the Physical Fitness Development of 5-6-Year-Old Children

To identify the evaluation criteria for assessing the physical fitness development of 5-6-year-old children, the following steps were undertaken:

1. Examination of test systems previously used by both domestic and international researchers to assess the physical development of 5-6-year-old children in preschool settings.
2. Gathering opinions from administrators, experts, and preschool teachers to select the most appropriate tests for evaluating children's physical fitness development.
3. Assessing the reliability and informative value of the selected test system.

Through the process of analysis and reference to related studies conducted by Vietnamese researchers such as Luong Kim Chung and Nguyen Toan, as well as foreign authors including Liu Tan, Prolop, and Luroko, etc, a total of 21 tests were compiled. Tests that received 70% or higher agreement among consulted experts were adopted in this study to evaluate the physical fitness development of 5-6-year-old children at May 19 Kindergarten, Thai Nguyen City, Thai Nguyen Province, Vietnam. The results of the expert interviews regarding the selected tests are presented in Table 1:

Table 1: Results of expert interviews on physical fitness assessment tests for 5-6-year-old children at May 19 Kindergarten, Thai Nguyen City, Thai Nguyen Province (p = 265)

No.	Test content	Agree	Percen-tage %
1	10 m sprint	131	49,56
2	18 m sprint	230	86,73
3	30 m sprint	96	36,28
4	Long throw with the non-dominant hand	239	90,27
5	Long throw with the dominant hand	232	87,61
6	Long throw with both hands	246	92,92
7	Standing long jump	246	92,92
8	Standing vertical jump	246	92,92
9	Hurdle jump over a 20 cm rope	115	43,36
10	Hopping on one leg for 5 meters	87	32,74
11	Two-hand target ball throw	80	30,09
12	Walking on a balance beam while carrying a sandbag on the head	141	53,10
13	Shuttle run (change-of-direction running)	131	49,56
14	Strike and catch a ball with both hands	220	83,19
15	Overhead target throw	159	60,18
16	One-leg balance	220	83,19
17	Endurance run for 35 giây (m)	141	53,10
18	Endurance run for 55 giây (m)	141	53,10
19	Endurance run for 75 giây (m)	256	96,46
20	Endurance run for 95 giây (m)	159	60,18
21	Sit and reach forward	237	89,38

The results presented in Table 1 indicate that, based on the expert interview criteria, the study selected 10 tests to assess the physical fitness development of 5-6-year-old children at May 19 Kindergarten, Thai Nguyen City, Thai Nguyen Province**.** The selected tests include: *18 m sprint; long throw with the non-dominant hand; long throw with the dominant hand; long throw with both hands; standing long jump; standing vertical jump; bounce and catch a ball with both hands; sit and reach forward; standing balance on one leg; and 75-second endurance run.*

3.2. Determining the Reliability and Informativeness of the Tests

Test Reliability

The reliability testing was conducted on a sample of 60 children. Each child was tested twice, with a two-day interval between the two sessions. The testing conditions were kept identical across both sessions. The reliability of each test depends on the stability and reproducibility of results when the tests are repeated after a fixed period under the same conditions with the same participants. To examine test reliability, the study calculated the paired correlation coefficient (r) for each test, comparing the results of the first and second testing sessions.

If r = 0,8 - 0,89, the reliability is considered acceptable for use.

If r = 0,9 - 0,94, the reliability is considered good.

If r = 0,95 - 0,99, the reliability is considered excellent.

All correlation coefficients were required to meet the reliability threshold of p≥95%.

The reliability coefficients of the physical fitness assessment tests. The correlation values between the two testing sessions are presented in Table 2.

Table 2: Test-retest correlation coefficients for physical fitness tests among 5-6-year-old children at May 19 Kindergarten, Thai Nguyen City

No.	Test content	r
1	18 m sprint	0.821
2	Long throw with the non-dominant hand	0.831
3	Long throw with the dominant hand	0.844
4	Long throw with both hands	0.856
5	Standing long jump	0.824
6	Standing vertical jump	0.672
7	Strike and catch a ball with both hands	0.856
8	One-leg balance	0.873
9	Sit and reach forward	0.878
10	75-second endurance run	0.848

The results presented in Table 2.2 indicate that most of the tests achieved an acceptable level of reliability, except for the "standing vertical jump" test. Therefore, this test was excluded from further analysis in the evaluation of informativeness.

3.3. Verification of the Informative Value of the Tests

Since there is no "central factor" to serve as a basis for verifying the informative value of the tests, we applied the "factor analysis method." According to Hoàng Trọng, "The informative value of a factor refers to the correlation between the results of a motor exercise and the common factor shared by a group of several motor exercises. The assessment of a factor's informative value is conducted through a statistical method known as factor analysis." Factor analysis is a general term that refers to a set of procedures mainly used to reduce and summarize data. In research, a large number of variables may be collected, and these variables are often interrelated. In factor analysis, each motor exercise is considered an independent variable. This method can identify factors that explain the correlations within a set of many variables, recognizing one or several dominant variables from that set that is, identifying the factor that characterizes a group of variables. Factor analysis makes it possible to divide variables into basic factor groups and to determine the weight (loading) of each variable on those basic factors. It also identifies the variable with the highest factor loading within each group. The common factor thereby becomes a new independent variable, whose values are calculated by multiplying the original variables in the group by their corresponding factor coefficients. These resulting values constitute the factor, which can be expressed by the following formula:

$$F_i = W_{i1}X_1 + W_{i2}X_2 + W_{i3}X_3 + W_{i4}X_4$$

In which:

- F: is "the estimated value of the factor (factor score)".
- W: is the weight or factor score coefficient.
- X: là the value of the original variables.

When inputting the data into the SPSS software for factor analysis, each test is considered an independent variable (or original variable). The process of factor analysis to determine the informative value of the factors involves several steps, among which the two most important are:

First: Identifying the common factor representing all physical fitness tests (independent variables). This common factor functions as a central factor and is denoted as the variable "PFQ".

Second: Determining the correlation between each test (original variable) and the common factor. The correlation coefficient between each motor test and the "PFQ" factor reflects the strength of their relationship. These correlation coefficients are used as informative coefficients.

The values presented in Table 3 represent the correlation coefficients between each test and the "PFQ" factor, which serve as the basis for assessing the informative validity of the tests. According to the conventional criterion, a test is considered to possess sufficient informative validity when r > 0. 4.

Table 3: Informational Value of Physical Fitness Tests for 5-6-Year-Old Children at 19/5 Kindergarten, Thai Nguyen City, Thai Nguyen Province (p=60)

No.	Test content	r (p=60)
1	18m sprint	0.512
2	Long throw with the non-dominant hand	0.321
3	Long throw with the dominant hand	0.546
4	Long throw with both hands	0.231
5	Standing long jump	0.434
6	Strike and catch a ball with both hands	0.432
7	Sit and reach forward	0.356
8	75-second endurance run	0.455
9	One-leg balance	0.423

The results in Table 3 show that among the nine tests examined, six met the criteria for informativeness, while three did not: "Throwing distance with both hands," "Throwing distance with the non-dominant hand," and "Sit and reach forward." The tests selected for use include: "18-meter sprint," "Standing long jump," "Throwing distance with the dominant hand," "Bounce and catch the ball with both hands," "One-leg balance test," and "Endurance run (75 seconds)."

3.4. The current status of the physical fitness development level among children aged 5-6 years.

To assess the current status of the physical fitness development level among children aged 5-6 years, we utilized the system of tests established above. The obtained results are as follows:

Table 4: The level of physical fitness qualities (PFQ) development among children aged 5-6 years (p=60)

PFQ	Exercise	Gender	Development level					
			High		Average		Low	
			Quan-tity	%	Quan-tity	%	Quan-tity	%
Agile	18 m sprint	Boys	14	23,33	30	50,6	16	26,67
		Girls	13	21,67	28	46,9	19	31,67
Strong	Long throw with the dominant hand	Boys	15	25,00	29	49	16	26,67
		Girls	14	23,33	29	48,5	17	28,33
	Standing long jump	Boys	15	25,00	30	49,8	15	25,00
		Girls	13	21,67	28	47,3	19	31,67
	Overall	Boys	15	25,00	29	49,4	16	26,67
		Girls	13	21,67	28	47,1	19	31,67
Ingeni-ous	Striking and catching a ball	Boys	13	21,67	28	48,1	19	31,67
		Girls	14	23,33	31	51	15	25,00
	One-leg balance	Boys	13	21,67	27	46,1	20	33,33
		Girls	14	23,33	28	47,7	18	30,00
	Overall	Boys	13	21,67	28	47,1	19	31,67
		Girls	13	21,67	29	49,4	18	30,00
Endur-ing	75-second endurance run	Boys	13	21,67	30	50,6	17	28,33
		Girls	11	18,33	28	47,3	21	35,00

Through the table above, it can be seen that the level of PFQ development of girls and boys is not equal, the qualities of speed, strength, and endurance of boys are better than girls, but in terms of dexterity, girls are better than boys. This reflects the characteristics of motor development of children at preschool age. Also through the results of table 2.7, it can be seen that 3-4 year old children at 19/5 Kindergarten, Thai Nguyen City have the level of PFQ development mainly at medium and low levels.

4. Conclusion

Based on the results of the present study, the following conclusions can be drawn:

The study successfully developed a set of evaluation criteria for assessing the physical fitness development of 5-6-year-old children at 19/5 Kindergarten, Thai Nguyen City. The assessment system comprised six components: *18-meter sprint; throwing distance with the dominant hand; standing long jump; catching and striking a ball with both hands; one-leg balance; and a 75-second endurance run.*

The survey results indicate that the majority of 5-6-year-old children exhibited average to below-average levels of physical fitness, with only a limited proportion reaching high levels. Additionally, gender differences were observed: boys demonstrated superior performance in speed, strength, and endurance, whereas girls showed advantages in agility.

These findings reflect the physical development characteristics of preschool children and provide a scientific basis for teachers and educational administrators to design appropriate physical education programs. The proposed set of criteria may serve as a practical tool for assessing, monitoring, and guiding physical fitness development in 5-6-year-old children at the preschool level, while also offering directions for further research across other localities.

6. Funding

This research was funded by Thai Nguyen University of Education under grant number TNUE-2024-09, with Dr. Dao Thi Hoa Quynh as the principal investigator.

References

1. Malina RM, Bouchard C, Bar-Or O. Growth, maturation, and physical activity. 2nd ed. Champaign (IL): Human Kinetics; 2004.
2. Gallahue DL, Ozmun JC, Goodway J. Understanding motor development: infants, children, adolescents, adults. 7th ed. Boston: McGraw-Hill; 2012.
3. Haywood KM, Getchell N. Life span motor development. 7th ed. Champaign (IL): Human Kinetics; 2020.
4. Ministry of Education and Training. Preschool education program. Circular No. 28/2016/TT-BGDĐT, dated December 30, 2016. Hanoi (Vietnam): Ministry of Education and Training; 2016.
5. Pham NL, Nguyen TMH. Assessment of physical development in preschool children in physical education. Journal of Educational Science. 2020;18(3):45-52.
6. Ortega FB, Cadenas-Sanchez C, Sánchez-Delgado G, Mora-González J, Martínez-Téllez B, Artero EG, *et al*. Systematic review and proposal of a field-based physical fitness-test battery in preschool children: the PREFIT battery. Sports Medicine. 2015;45(4):533-555.
7. Meredith MD, Welk GJ. Fitnessgram/Activitygram test administration manual. 4th ed. Dallas (TX): The Cooper Institute; 2013.
8. Tremblay MS, Chaput JP, Adamo KB, Aubert S, Barnes JD, Choquette L, *et al*. Canadian 24-hour movement guidelines for the early years (0-4 years): an integration of physical activity, sedentary behaviour, and sleep. BMC Public Health. 2017;17(Suppl 5):874-885.