

Assessment of the effectiveness of the physical education process in preschool educational organizations

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Abstract: Diagnostic control model is analyzed through special exercises, standardized measurements or tests to evaluate the effectiveness of the process of physical education in preschool educational institutions. Key words: observation, control test, general endurance, dynamic strength, speed-power ability, active flexibility, coordination ability.

1 Introduction

Modern scientific-theoretical thinking strives for the essence of events and processes that are changing dramatically today. This trend requires the introduction of diagnostic and corrective analysis technologies into the practice of the socio-economic sphere as an object of scientific study and efficiency improvement.

Today, paying great attention to the development of science in our country is becoming a demand of the times. It was criticized that the integration of science and production remains at a low level, that scientific research is not sufficiently supported, that the work in this regard, the training of personnel, the creation and implementation of scientific developments in the fields are of strategic importance.

In the process of organizing physical education classes in educational institutions, it is required to carry out control work on the physical development and physical fitness of students every year [1].

2 Literature analysis and methodology

One of the requirements of today is that educators of educational institutions should engage in diagnostic practice in the context of pedagogical activity. Any activity is also based on the ultimate goal, objectives and expected results of the work done. Summing up the results of activities, summing up practical conclusions – determining vacant or successful places, taking them into account at subsequent stages of activity is called diagnostics.

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Diagnostic control is aimed at studying the difficulties in mastering motor actions by students, in the process of learning and education, influencing pedagogical (biomechanical, physiological, biochemical) social and family factors.

And the results of the diagnosis allow you to properly plan the educational process, sports training, correct mistakes, conduct psychological and pedagogical prevention. It is not enough for a teacher to master the educational methods of health-improving physical education. A teacher should be able to analyze the results of his activities, timely identify the causes of difficulties for pupils, eliminate these difficulties in the process of an individual approach to a pupil. One of the means and ways to improve the education and upbringing system is scientifically based physical education-diagnosis and correction. Today, no one denies how great is the role and importance of physical diagnosis and correction.

3 Discussion and research results

Modern pedagogical diagnostic directions for monitoring the physical development of preschool children include:

- performing exercises aimed at developing physical qualities;
- performing basic actions;
- formation of a beginner's vision of some popular sports;
- Mastering action games;
- acquisition of skills of purposefulness and self-control of motor activity;
- mastering simple rules and requirements of a healthy lifestyle [5].

To effectively organize the physical development of a child in preschool age, it is necessary to take into account a number of fundamental differences between the physical development of a person and his life cycle. For example, not all abilities are controllable due to the fact that preschool age is not considered a sensory period.

A wide range of pedagogical diagnostic methods are used in the control of children's physical development: control testing, observation, oral interview, expert assessment. Preschool educational institutions, in order to implement educational tasks that correspond to their existing conditions, can choose important diagnostic methods. General conditions for choosing diagnostic methods:

- individualization of education (including child support, development of his educational trajectory and professional characteristics);
- optimization of work with children.

The main difference between these recommendations is that the models of mathematical calculation and statistical analysis of the reliability of the results are presented, which allow objectively confirming the effectiveness of pedagogical activities for the physical development of children.

In order to determine the level of development of physical qualities (motor abilities) of children, control tests are conducted using special exercises, standardized measurements, or trial (test) work. Through testing, the pros and cons of the means and methods used in the process of physical education are revealed.

Based on the professional competence of the teacher, pedagogical-correctional (correctional) and medical-psychological tasks with children with special educational needs, including pre-school education and upbringing of children in need of correction and rehabilitation of physical and mental development deficiencies, are carried out according to individual plans developed on the basis of the state educational program of pre-school education and upbringing.

The need to implement pre-school education programs in the process of pedagogical activity aimed at organizing modern monitoring requires the implementation of activities that meet the requirements of the professional standard of the teacher [3].

1. The content of the professional and pedagogical activity of the educator is as follows:
- organization, implementation and analysis of the results of pedagogical monitoring of the development of educational programs by children;
 - planning and correction of educational tasks based on monitoring analysis, taking into account the individual abilities of individual children;
 - development of children taking into account age and individual characteristics of development.

For physical education, a group of children belonging to three groups of patients is selected by conducting primary diagnostic observations (see Table 1).

Table 1. The nature of the distribution of children into groups

Health groups	Medical teams for physical education	Training types
I – Health group	<p>Main</p> <p>Children:</p> <ul style="list-style-type: none"> - free of defects due to health and physical development; - does not lag behind peers in physical development and physical fitness due to functional weakness 	The full Physical education training of the educational institution is carried out
II – Health group	<p>Preparation</p> <p>Children:</p> <ul style="list-style-type: none"> - poor physical fitness, or morphofunctional disorders; - belonging to a risk group due to a pronounced disease (pathological condition) ; -Chronic diseases that are under constant medical (clinical and laboratory remission) control for 3-5 years 	Physical education classes are conducted taking into account training loads and individual characteristics conducted in educational institutions
III – Health group	<p>Special Medical Group (subgroup "A")</p> <p>Children:</p> <ul style="list-style-type: none"> - persistent deterioration of health, a chronic painful condition of a temporary nature, deformities and birth defects, the development of which is not observed; - strict restriction of physical activity due to physical development disorders. 	A special program of an educational institution for adaptive physical culture

It allows to carry out pedagogical activities based on the individual characteristics of each child, by distributing children according to their affiliation to medical groups.

There are general requirements for the selection of control tests [2,5]:

- standardized conditions for all children involved in diagnostic control (time, nutrition, workload, etc.)k.z.conducting tests in);
- be easy and understandable for all children, regardless of their level of physical fitness;
- all tests have their own quantitative indicators (seconds, times, meters) ;
- control of the simplicity of the measurement and evaluation of exercises (see Table 2).

Table 2. Sample of control trainings (tests)

Action skills	Sample for the control (test) work
<i>Physical quality of endurance</i>	
General endurance	Mixed movement for 1000 meters (alternating walking and running)
<i>Power of physical capability</i>	
Dinamic power	Lifting and lowering of the torso in the supine position (several times per minute)
Quick power capability	Long jump on two legs from a standing position (cm)
	Throwing a 150-gram ball over a distance (m)
	Throwing two supporting stuffed balls from behind the head (m)
<i>Speed physical capability</i>	
Speed capabilities	Running for 30 meters

The physical quality of flexibility	
Active flexibility	Leaning forward while standing on the gymnastic seat (from the edge of the seat – cm)
The physical quality of dexterity	
Coordination abilities	3x10 meter (s) – repeated running

Even modern standards cannot recommend reference standards for teachers that are suitable for all control test situations. A rational solution to the individualization of physical education is that when comparing variations in measurement results during the school year, it is advisable to use a method to assess the reliability of the average difference of the correlated sample.

The procedure for calculating the reliability of assessing the dynamics of a child's physical development and indicators of changes using the T-criterion of reliability is as follows [4]:

1. The first and second columns of the special table are filled in. For example, the performance of long jumps of children of the preparatory school group from place to place, recorded at the beginning of the school year (x_1) and at the end of the school year (x_2) (see Table 3).

Table 3. Calculating the reliability of the difference between long jump test scores

Indicators at the beginning of the academic year x_1	Indicators at the end of the academic year x_2	Differences $d = x_2 - x_1$	Deviation from the average $d - \bar{d}$	Deviation squares ($d - \bar{d}$) ²
1	2	3	4	5
78	112	34	19,3	372,5
94	113	19	4,3	18,5
106	104	-2	-16,7	278,9
83	95	12	-2,7	7,3
122	140	18	3,3	10,9
103	111	9	5,7	32,5
107	120	13	-1,7	2,9
98	115	17	2,3	5,3
88	106	18	3,3	10,9
76	90	14	-0,7	0,5
108	130	22	7,3	53,3
91	93	2	-12,7	161,3
82	110	28	13,3	176,9
90	93	3	-11,7	136,9
		$\sum d = 206$	$\sum (d - \bar{d})^2 = 1268,6$	

2. The difference between the first and second rows is calculated by the indicator in the third column $\sum d = 206$.

3. The average value of the difference is calculated.

$$\bar{d} = \frac{\sum d}{n} = \frac{206}{14} = 14,7$$

4. The deviation from the average value of the difference is calculated $d - \bar{d}$.

5. Square the values of the calculated deviation (column 5).

6. The standard deviation is calculated using the Formula.

$$\sigma_d = \sum \sqrt{\frac{\Sigma(d - \bar{d})^2}{n-1}} = \sqrt{\frac{1268,6}{14-1}} = 9,88$$

7. Using the formula, the average error is m_d

$$m_d = \frac{\sigma_d}{\sqrt{n-1}} \quad m_d = \frac{9,88}{\sqrt{14-1}} = 2,74$$

8.the t value is calculated

$$t = \frac{\bar{d}}{m_d} = \frac{14,7}{2,74} = 5.36$$

9. The reliability of the comparative difference is determined by table 5 (see table 4). To do this, a certain value ($t = 5.36$) is compared with the value of the rank significance of 5% in a special table ($K = N - 1$ is the rank value of freedom, where $N = 14$ is the number of subjects).

Table 4. The index of the t - criterion (student) for a significance level of 5% corresponding to the value of freedom

Degree of freedom(comfort) (k)	P < 0,05	Degree of freedom(comfort) (k)	P < 0,05	Degree of freedom(comfort) (k)	P < 0,05
1	2,16	13	2,16	27	2,05
2	4,30	14	2,15	28	2,05
3	3,18	15	2,13	29	2,04
4	2,78	16	2,12	30	2,04
5	2,57	17	2,11	40	2,02
6	2,45	18	2,10	50	2,01
7	2,37	21	2,08	60	2,00
8	2,31	22	2,07	80	1,99
9	2,26	23	2,07	100	1,98
10	2,23	24	2,06	120	1,98
11	2,20	25	2,06	200	1,97
12	2,18	26	2,06	500	1,96

4 Conclusion

The calculated empirical value of t (5,36), exceeding the value of t 0,05 (2,16) in the comparable table, indicates that there is a significant difference between the results of children's long jumps recorded at the beginning and at the end of the school year, $r < 0,05$ (with a significance level of 5%). It is established that the physical development of children during the school year has a sufficient justification for the effectiveness of the pedagogical process.

5 Recommendation

1. The following pedagogical diagnostic directions of physical development control are recommended in preschool institutions:

- performing exercises aimed at developing physical qualities;
- performing basic actions;

- formation of a beginner's vision of some popular sports;
- mastering action games;
- acquisition of skills of purposefulness and self-control of motor activity;
- mastering simple rules and requirements of a healthy lifestyle.

2. For the effective organization of the physical development of a child in preschool age, it is necessary to take into account a number of fundamental differences between the physical development of a person and his life cycle. For example, not all abilities are controllable due to the fact that preschool age is not considered a sensory period.

3. A wide range of pedagogical diagnostic methods are used in the control of children's physical development: control testing, observation, oral interview, expert assessment. Preschool educational institutions, in order to implement educational tasks that correspond to their existing conditions, can choose important diagnostic methods.

4. General conditions for the selection of diagnostic methods:

- individualization of education (including child support, development of his educational trajectory and professional characteristics);
- optimization of work with children.

The main difference between these recommendations is that it is advisable to substantiate the reliability of indicators using statistical analysis models that allow objectively confirming the effectiveness of the processes of strengthening children's health and physical development.

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