

The Current Situation of Students' Physical Fitness Test and Its Influencing Factors--Taking Dongguan Nanbo Vocational and Technical School as an Example

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Abstract: This paper takes students of 2017 of Nanbo Vocational and Technical School in Dongguan as the research objects. With scientific research methods like literature, mathematical statistics, and comparative analysis, it summarizes and analyzes the test indicators of the "National Students' Physical Health Standard" for 548 students while they are at school. The results show that the speed of boys rises slightly, the strength increases and then decreases, the average score does not reach the passing level, and the explosive power is good. There is no significant difference in three years, the flexibility decreases year by year, at the passing level; However, the speed of girls first decreases and then rises, and the strength rises and then decreases, generally at a passing level with good flexibility. In terms of overall scores and standard-reaching rates, the excellent and good grades of the third grade are lower than those of the first and second grades, and its failure rate is also lower than the two grades. Generally speaking, the passing rate is good and the excellent rate is low in three years. Most students are between passing and being good, and there is a great space for improvement.

1. Research purposes

In August 2019, when inspecting schools in the northwest, Xi Jinping said "China's economy needs to be supported by the real economy, which requires a large number of professionals and craftsmen. Thus, vocational education is promising". Good physique is a prerequisite for secondary vocational students to complete knowledge learning and skill training. The dynamic analysis of the test data of "National Students' Physical Health Standard" of secondary vocational students can reveal the changing characteristics of their physical condition. Furthermore, we can take effective measures to improve school physical education, which is of great significance.

2. Research Objects and Methods

This paper takes students of 2017 of Nanbo Vocational and Technical School in Dongguan as the research objects; with scientific research methods like literature, test, and mathematical statistics, it summarizes and analyzes the test data of "National Students' Physical Health Standard" for 548 students while they are at school.

3. Results and Analysis

3.1 Results and Analysis of Physical Health Test Data of 2017's Students in Dongguan Nanbo Vocational and Technical School

3.1.1 Comparison Analysis of Body Shape

Table 3-1. Comparison of Body Shape of Boys ($\bar{x} \pm s$)

	Height (cm)	Weight (kg)	BMI(kg/m ²)
Grade One	168.6±5.60	60.6±8.65	21.1±2.43

	Height (cm)	Weight (kg)	BMI(kg/m ²)
Grade Two	169.2±5.45	61.5±9.11	21.4±2.57
Grade Three	170.5±5.33	63.5±8.44	21.7±2.47

Table 3-2. Comparison of Body Shape of Girls ($\bar{x} \pm s$)

	Height (cm)	Weight (kg)	BMI(kg/m ²)
Grade One	157.3±5.25	52.0±6.59	21.0±2.13
Grade Two	158.6±5.12	51.2±6.21	20.4±1.91
Grade Three	158.9±4.93	50.5±5.41	20.0±1.73

The statistical results in Table 3-1 show that the average heights of boys from grade one to three are 168.6.6cm, 169.2cm, and 170.5cm; The average weight is 60.6kg, 61.5kg, 63.5kg; The average BMI index is 21.1kg/m², 21.4kg/m² and 21.7kg/m², respectively, showing a slight increase year by year.

The statistical results in Table 3-2 show that the average height of girls from one to three is 157.3cm, 158.6cm, 158.9cm; The average weight is 52.0kg, 51.2kg, 50.5kg; The average BMI index is 21.0 kg / m², 20.4 kg / m² and 20.0 kg / m² respectively, showing a decreasing trend year by year.

3.1.2 Comparative Analysis of Body Function

Table 3-3. Comparison of Basic Situation of Body Function ($\bar{x} \pm s$)

	Lung Capacity of Boys (ml)	Lung Capacity of Girls (ml)
Grade One	3921.3±709.72	2807.6±478.74
Grade Two	4105.2±707.95	2879.0±475.13
Grade Three	4310.6±579.49	3062.9±427.34

The statistical results in Table 3-3 show that the lung capacity of boys of 2017 in Dongguan Nanbo Vocational and Technical School is the best in grade three; The average lung capacity of girls in grade one to three is increasing year by year, and both have reached a good level.

3.1.3 Comparison Analysis of Physical Quality

Table 3-4. Comparison of Physical Quality of Boys ($\bar{x} \pm s$)

	50m (s)	Pull-up	Standing Long Jump (CM)	1000m (s)	Sit and Reach (cm)
Grade One	7.62±0.34	4±2	229.1±12.55	236.1±20.26	13.1±5.51
Grade Two	7.58±0.31	5±1	229.9±15.31	241.8±21.17	12.6±5.34
Grade Three	7.51±0.29	4±1	224.4±14.50	247.0±20.37	12.0±5.19

Table 3-5. Comparison of Physical Quality of Girls ($\bar{x} \pm s$)

	50m (s)	Sit-up	Standing Long Jump (CM)	800m (s)	Sit and Reach (cm)
Grade One	9.21±0.4 8	35±8	165.1±13.78	229.8±16.9 3	16.0±8.10
Grade Two	9.32±0.4 5	38±6	166.6±14.15	231.1±17.7 0	18.1±7.13
Grade Three	9.28±0.5 1	37±6	159.9±11.36	239.7±14.7 2	16.8±6.24

1. Comparative analysis of changes of test results in the 50m race. The statistical results show that the average scores of boys in the 50m race from grades one to three are slowly decreasing year by year, and the overall scores are between passing and being good; The average score of girls in grade one is the best, and the overall scores are all at the passing level.

2. Comparative analysis of changes of test scores in pull-up (boys) and sit-up (girls). The statistical results show that there is no significant difference in the pull-up scores of boys in grade one to three, and the overall level is poor with all failures; The average score of one-minute sit-up for girls from grade one to three shows a trend of rising first and then falling.

3. Comparative analysis of changes of test scores in standing long jump. Both boys and girls have the best standing long jump scores in grade two. However, they only reach the passing level, there is still a great space for improvement, and grade three is the worst.

4. Comparative analysis of changes of test scores in 800m (girls) and 1000m (boys) race. From grade one to three, the overall scores of boys in 1000m race is between passing and being good, showing a decreasing trend year by year; The average scores of 800m race of girls from three grades are better in grade one and two, while falling in grade three; Generally speaking, both boys and girls show a decreasing trend year by year. This shows that the endurance of the students at school in three years also decreases with the increase of age.

5. Comparative analysis of changes of test scores in sit and reach. The overall score of boys in three grades in sit and reach is at a passing level, best in grade one and worst in grade three; The average score of girls in three grades in sit and reach tends to rise first and then fall. Its grade two is the best and reaches a good level. From the data, the tested boys show a decreasing trend year by year, but the girls show a trend of rising and then falling.

3.1.4 Comparison and Analysis of the Total Score and the Standard-reaching Rate

According to requirements of "National Students' Physical Health Standard", the total score of physical test includes 59.9 or below for failure, 60-79.9 for passing, 80.0-89.9 for good, 90 or above for excellent.

Table 3-6. Comparison of the Total Score

	Grade One	Grade Two	Grade Three
Boys' total score (point)	73.1	72.8	72.2
Girls' total score (point)	74.2	76.1	74.1

Table 3-7. Comparison of the Standard-reaching Rate

	Grade one		Grade Two		Grade Three	
	Boys	Girls	Boys	Girls	Boys	Girls
Excellent Rate	2.5%	1.6%	2.1%	1.9%	1.5%	1.2%
Good Rate	43.1%	45.2%	38.7%	51.2%	30.7%	38.2%
Passing Rate	43.7%	47.6%	47.5%	39.1%	64.5%	58.9%
Failure Rate	10.7%	5.6%	11.7%	7.8%	3.3%	1.7%

1. Statistics and analysis of total score. The statistical results in Table 3-6 show that the total score of boys has decreased slightly year by year, and the overall score needs to be improved; Girls have the highest total scores in grade two, with no significant difference between grade one and three. On the whole, the total scores of tested students is between passing and being good, with average results.

2. Statistics and analysis of standard-reaching rate. The statistical results in Table 3-7 show that the excellent and good rate of boys are decreasing year by year, but the passing rate is increasing year by year; The excellent and good rates of girls first increase and then decrease, and the good rate of grade two takes up more than half, which is better; Generally speaking, the excellent and good rates of boys and girls in grade three are lower than those of other two grades, as well as the failure rate. To sum up, the overall passing rate of tested students is good, but the excellent rate is low. The passing rate of boys is rising, especially there is a significant difference between grade three and other two grades; The passing rate of girls shows a trend of decreasing first and then rising.

3.2 Analysis of the Factors Influencing the Results of Physical Test

3.2.1 Analysis of Subjective Factors

1. Factors of physical exercise. According to the survey, 62.7% of the tested students like physical exercise, 18.5% do not like or are very exclusive, and the rest 18.8% hold a general attitude. Students' attitude towards physical activities is one of the main factors influencing their physical health.

In terms of exercise frequency, 21.7% of the students participate in exercise three or more times a week. 60.9% of students participate in exercise with not enough frequency (3 times or more). 17.4% of the students do not actively participate in exercise, with just normal class for physical education.

In terms of exercise intensity, 20.5% of the students have over 60 minutes for exercise, 65.2% have 30-60 minutes, and 14.3% have less than 30 minutes. From the perspective of improving human physique, exercise time should be over 60 minutes so as to achieve better effects. The data show that most of the tested students are not exercising enough, and only reach the amount of exercise to maintain the current physique. Therefore, it is necessary to further prolong the exercise time and increase the exercise intensity.

2. Factors of ideological understanding. Most students think that academic performance and professional knowledge and skills are more important than physical performance. Thus, they should focus on academic lessons and ignore physical education and extracurricular exercises. This kind of incorrect learning view and ideological understanding is bad for improving their physical health.

3.2.2 Analysis of Objective Factors

1. Factor of schools. The first is policy implementation. There are not strict and complete phenomena in the implementation of relevant policy documents. Relevant national departments have clearly stated that students' physical test results must be taken as the necessary conditions for their evaluation and graduation. However, in the specific implementation, schools mainly considers the students' academic scores, skills, and competitions, and do not pay enough attention to the physical test.

The second is physical education. Because of certain risks in most sports, in recent years, safety accidents in school physical education are quite common, and relevant systems still need to be improved. It hard to fully protect the legitimate rights and interests of schools, teachers and students, so physical education teachers have certain concerns about classroom teaching. As a result, physical education in schools can only ensure the most basic exercise intensity, and the sports with high intensity are basically not open or less open, which seriously restricts the development of students' physical health level.

2. Factor of families. Through surveys and interviews, it is found that most parents focus more on their children's academic performance and professional skills. Few parents care about their

children's physical performance and physical health. Insufficient or incomplete attention of parents to children's physical health is also one of the reasons to cause poor students' physical health.

4. Conclusions and Suggestions

4.1 Conclusions

Firstly, most of the tested students are well developed in physique, but there are also some cases of lean and overweight. The average height and weight of boys are increasing slowly, and the obesity rate is decreasing; the average height of girls increases slowly, their weight decreases year by year, the BMI index also decreases year by year, and the light weight rate is increasing.

Secondly, the body function index increases year by year from grade one three, with the biggest change in three and the overall good level.

Thirdly, in terms of physical quality, boys have good explosive and speed qualities, but poor strength, and fail to reach the passing level in pull-up which needs to be noticed. Besides, their endurance and flexibility is decreasing year by year and are at the passing level; The speed and strength of girls are average, at a passing level. Their explosive power needs to be improved, the endurance is decreasing year by year, but the flexibility is good.

Fourthly, in terms of overall scores and standard-reaching rate, the passing rate is good, but the excellent rate is low. Most students are between passing and being good, and there is a great space for improvement.

4.2 Suggestions

Firstly, schools should strictly implement the relevant test standards and evaluation systems of "National Students' Physical Health Standard", and does not perform "formalism." We should enhance the understanding of physical health in schools, teachers, students and parents, and guide students to actively participate in exercises.

Secondly, we need to further strengthen the reform of school physical education curriculum. We should ensure that the physical education class is more than three times a week, so that students can achieve effective exercise frequency; Each class sets up certain special physical training, especially training for strength and endurance, so that students can achieve effective exercise intensity; We should strictly conduct the evaluation system of physical education curriculum to enhance students' attention.

Thirdly, we should enhance the construction of teachers and encourage them to actively participate in relevant training inside and outside schools. This can further improve their knowledge of physical health, improve their sense of responsibility and ethics to seriously treat the work of students' physical health, and promote the good development of students' physical health.

Fourthly, from the school level, we should further guide students to arrange their extracurricular activities scientifically and reasonably, encourage them to actively participate in sports clubs and organize various sports competitions, sports weeks and other activities. These will enhance the sports atmosphere of schools, gradually cultivate students' interest in sports, and improve their physical health.

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