The Study of Students' Physique Characteristics

Liao Yuxiang and Lu Guohua[*]

School of Physical Education, Yangtze University, Jingzhou, Hubei, China

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ABSTRACT

This article takes the Yangtze University as an example, using documentation, physique fitness test and mathematical statistics method to study the 11,843 students ' physique, and comparing students ' physique in overall sample, sex and grades differences. The results showed that the physique condition of college students was at the level of passing, and presenting a "middle, two less" normal distribution trend; the relative strength of the waist and upper limbs of college students is generally weak. There are significant differences between the physique characteristics of different sex college students, and girls are better than boys; there are significant differences between the physique characteristics of different grades of college students, and sophomore better than freshman.

Keywords: College students; Physique; Characteristic analysis

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INTRODUCTION

In 2007 the ministry of education, the state general administration of sports has modified and perfected "student physical health standard", has issued a "national students health standard", in 2014 the ministry of education has further perfected the "standard", printed the report by the "national students physical health standard (revised in 2014)". It is clear that the primary task of school sports in our country is to improve the students' physical health and promote the comprehensive development of students [1]. Based on the Yangtze university colleges and universities in Hubei province as an example, this paper compared the differences of students' physique in gender, grade, reveals the students' physique condition of the contemporary, for college sports management staff in improving students' physique level and in-depth reform in colleges and universities sports teaching and so on to provide the reference and scientific basis.

EXPERIMENTAL SECTION

Research Objects and Methods
Research objects:
The test objects are the freshman and sophomore college students of Yangtze University, by sex, grade stratification. Students who participated in the physique test were students of the two grades (Students enrolling in 2015-2016) of the school, a total of 11843 students (Which does not include Professional sports students, sports specialty students, as well as physical illness and cannot participate in the physique testing students), including boys 6177 Name, girls 5666; first grade (Students enrolling in 2016) 6429, second grade (Students enrolling in 2015) 5414.

Research methods:
Test method: According to the 2014 Ministry of Education, the State Sports General Administration promulgated the "National Student Physical Health Standard (2014 revision)" in the physical health test indicators to test the physical condition of college students, the specific test indicators are as follows: body shape: Body Mass Index

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(height and weight); Function: Vital Capacity Indicators; Physical fitness: 1000 m race (male) / 800 m race (female), Standing Long Jump, 50 m race, Sit-and-Reach, Chinning (male) / 1 minute Sit-ups (female) [1].

Test equipment unified use in the body with the Department of Sports Technology Co., Ltd. Production equipment, to ensure the accuracy of test equipment before the testing the test are trained and evaluated, in strict accordance with the "National Student Physical Health Standard (2014 revision)" in the method and requirements to complete the test.

Mathematical statistics: The data of the test were sorted and screened, and then the data were analyzed by software such as SPSS17.0 according to the scoring standard in the National Student Health Standard (Revised 2014).

RESULTS AND DISCUSSION

Results and Analysis
The overall distribution of college students' physique:

Table 1: The weight of college students' physical test items

Test indicators	Body Shape	Function	Physical Fitness				
	Body Mass Index	Vital Capacity Indicators	1000 m race(male)/800 m race (female)	Sit-and-Reach	Standing Long Jump	50 m race	Chinning(male) / 1 minute Sit-ups(female)
Weight	15%	15%	20%	10%	10%	20%	10%

Note: quoted from National student physical health standard (revised in 2014)

Table 2: List of students' physical test scores

Test indicators	Mean (Male) M₁	Mean (Female) M₂	The total score M	Pass level range	Good level range	Excellent level range
Total score	69.7	75.35	72.53	(60.00, 80.00)	(80.00, 90.00)	(90.00, 100.00)
Body Mass Index	15	15	15	(9.00, 12.00)	(12.00, 13.50)	(13.50, 15.00)
Vital Capacity Indicators	11.1	10.95	11.03	(9.00, 12.00)	(12.00, 13.50)	(13.50, 15.00)
1000 m race(male) /800 m race (female)	12.8	15.8	14.3	(12.00, 16.00)	(16.00, 18.00)	(18.00, 20.00)
Sit-and-Reach	7.1	7.3	7.2	(6.00, 8.00)	(8.00, 9.00)	(9.00, 10.00)
Standing Long Jump	6.7	7	6.85	(6.00, 8.00)	(8.00, 9.00)	(9.00, 10.00)
50 m race	15	13.8	14.4	(12.00, 16.00)	(16.00, 18.00)	(18.00, 20.00)
Chinning(male) / 1 minute sit-ups(female)	2	5.5	3.75	(6.00, 8.00)	(8.00, 9.00)	(9.00, 10.00)

From Tables 1 and 2 can be seen, grade evaluation criteria: pass 60 to 79 points, good 80 to 89 points, excellent 90 to 100 points, fail 60 points below; the test indicators by weight after the total score were : Body Mass Index 15 points, Vital Capacity Indicators 15 points, 1000m race (male) / 800m race (female) indicators 20 points, Sit-and-Reach indicators 10 points, standing long jump indicators 10 points, 50m race indicator 20 points, Chinning (male) / 1 minute Sit-ups (female) indicators 10 points. Table 2 results show that college students physical fitness of the test indicators of the total score M = 72.53 in the passing level range, indicating that college students physical level at the level of passing. 1000m race (male) / 800m race (female) indicators, college students are divided into M> 12.00, in the passing level range, indicating that college students physical endurance quality in the passing level; Chinning (male) / 1 minute Sit-ups (female) indicators, college students are points M <6.00, did not reach the level of passing range, indicating that the relative strength of the waist and upper limbs of college students is generally weak. Vital Capacity Indicators, college students were divided into M> 9.00, in a pass and a good level of bias. Body Mass Index, the overall average of M = 15.00 in the excellent level of the interval, the body shape is normal.

Differences in Physique Condition of College Students of Different Sexes
By analyzing the differences in the physical condition of the proportion of the number of students of different sex

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students in the same stage, the specific performance is as follows:
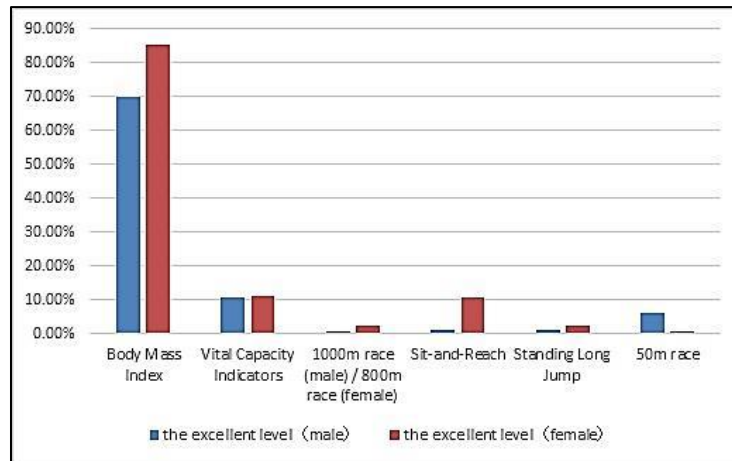

Figure 1: The ratio of the number of students of different sexes in the excellent level of each test project

Figure 1 shows that the proportion of different sex college students in the proportion of the outstanding level of each test project, in addition to 50 m race indicators on the boys slightly more than girls, the other test indicators are reflected in the proportion of girls at a good level slightly more than boys, There is no significant difference in the proportion of outstanding people in different test projects between boys and girls.
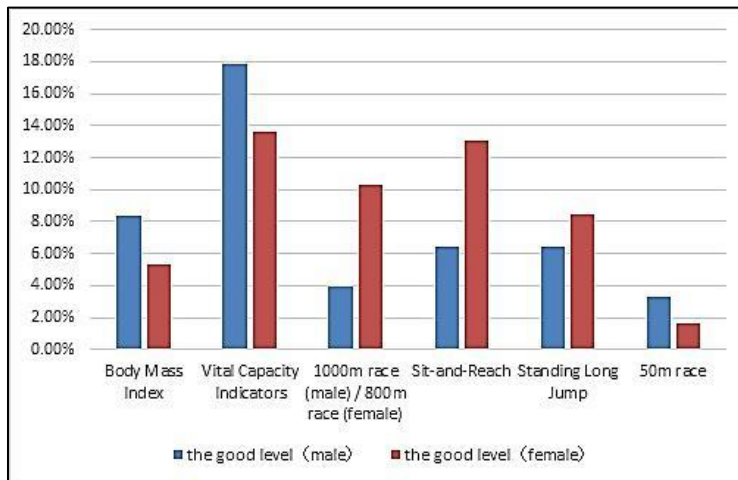

Figure 2: The ratio of the number of students of different sexes in the good level of each test project

The data in Figure 2 show that there is a significant difference in the proportion of the male and female students in Sit-and-Reach Indicators and 1000 m (male)/800 m (female) Indicators for the proportion of the students who have different test items at a good level. In response to the body function of Vital Capacity Indicators, reflecting the body shape of Body Mass Index, reflecting the physical fitness of 50m race Indicators, the proportion of boys is at a good level slightly more than girls. And in reflecting the flexibility of Sit-and-Reach Indicators and reflecting the endurance of 1000 m (male)/800 m race (female) Indicators, the proportion of girls in good numbers was significantly higher than that of boys, about twice the proportion of boys.

Figure 3 show that there was no significant difference in the proportion of the students of different sex students at the level of each test project. Except for the difference of vital capacity, the proportion of female students was 10% higher than that of boys in the passing level.
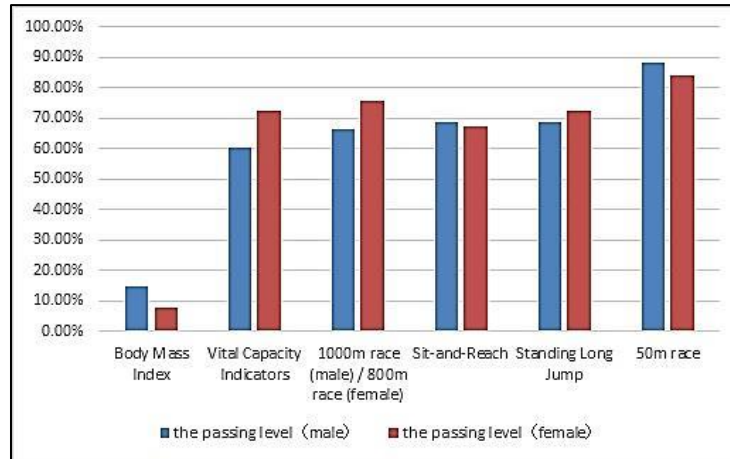
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Figure 3: The ratio of the number of students of different sexes in the passing level of each test project
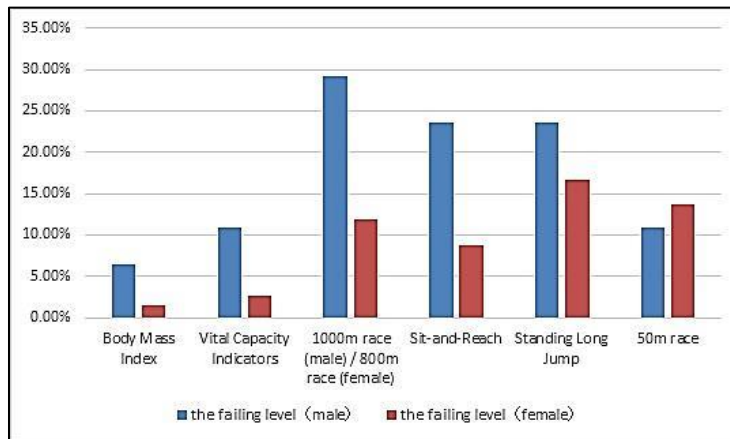

Figure 4: The ratio of the number of students of different sexes in the failing level of each test project

Figure 4 shows that the proportion of students of different sex students in the various test items failed, in addition the to the similar numbers of the proportion of 50m race Indicators, the proportion of other indicators of boys are generally more than girls, indicating that the number of girls and above the level of significant are better than boys. There were also significant differences in the proportion of male and female students who did not qualify at Sit-and-Reach and 1000 m (male)/800 m (female) Indicators. Sit-and-Reach and 1000 m (male)/800 m race (female) Indicators, the proportion of boys who fail the level of the number of girls is about 3 times.

Chinning (male)/1 minute Sit-ups (female) Indicators to reflect the upper limb and abdominal muscle strength, and cannot represent the body of the same muscle strength [2], and cannot be used as the dependent variable to analyze the difference of the physical condition of the college students of different sexes. So this article does not have to Chinning (male) / 1 minute Sit-ups (female) Indicators as a dependent variable for comparative analysis.

In summary, the difference between the number of boys and girls at each stage of the level of excellence is not significant; at a good level this stage, the ratio between boys and girls in Sit-and-Reach and 1000 m (male)/800 m race(female) Indicators are significantly different, girls are better than boys; in the passing level of this stage, the proportion between boys and girls in the proportion of Vital Capacity Indicators were significantly different, girls are better than boys; At the stage of the failing level, the proportion of boys and girls is also significantly different between Sit-and-Reach and 1000m (male) /800m race (female) Indicators, and boys are more than girls.

Differences in Physique of Different Grade College Students

The test of two independent samples was carried out by using the test variables of Yangtze University as the dependent variable and grade as independent variables. The results showed that there were some differences in the same test indicators in different grades. The specific situation is:

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Table 3: Different grades of college student' physique T test results (male)

	Freshman (M±SD)	Sophomore (M±SD)	T Value	P Value
Body Mass Index	21.669 ± 3.5119	21.788 ± 3.4281	1.345	0.179
Vital Capacity Indicators	3993.64 ± 692.049	4086.70 ± 707.112	5.212	0
50 m race	7.648 ± 0.6193	7.598 ± 0.5589	-3.384	0.001
Standing Long Jump	216.91 ± 20.535	220.48 ± 19.913	6.884	0
Sit-and-Reach	11.738 ± 6.8943	11.324 ± 6.7166	-2.381	0.017
Chinning	5.52 ± 4.241	6.55 ± 4.308	9.412	0
1000m race	259.22 ± 28.742	265.50 ± 31.612	8.105	0

From Table 3, the results showed that there was no significant difference in Body Mass Index between the two grades (P>0.05). There was a significant difference (P<0.01) between the two grades of boys in Vital Capacity Indicators, and the sophomore was significantly better than the freshman. There were significant differences between the two grades in 50m race Indicators (P<0.01), the sophomore was better than the freshman; there were significant differences in Sit-and-Reach Indicators between the two grades (P<0.05); there was a significant difference between the Standing Long Jump and Chinning (P<0.01), and the sophomore students were significantly better than the freshman students; There was a significant difference between the two grades of boys in 1000m race Indicators, and there was a significant difference between the two grades Sexual differences (P <0.01).

Table 4: Different grades of college student' physique T test results (female)

	Freshman (M±SD)	Sophomore (M±SD)	T Value	P Value
Body Mass Index	20.609 ± 2.7936	20.579 ± 2.6641	-0.409	0.683
Vital Capacity Indicators	2664.78 ± 473.168	2726.14 ± 522.287	4.605	0
50m race	9.534 ± 0.8225	9.431 ± 0.7148	-5.054	0
Standing Long Jump	163.29 ± 13.948	166.98 ± 15.400	9.394	0
Sit-and-Reach	14.586 ± 6.1882	14.531 ± 6.2446	-1.662	0.048
1 minute Sit-ups	24.70 ± 8.272	26.67 ± 8.190	8.984	0
800m race	247.49 ± 24.161	248.98 ± 25.007	2.28	0.023

From Table 4 results show: there were no significant differences in Body Mass Index between the two grades of girls (P>0.05); there were significant differences in Vital Capacity Indicators between the two grades of girls (P<0.01), and the sophomore was significantly better than the freshman; there are significant differences in 50m race Indicators between the two grades of girls (P<0.05), and sophomore students were significantly better than those of freshman students; there are significant differences in Sit-and-Reach Indicators of the girls in the two grades(P<0.05); two grades of girls in 1 minute Sit-ups Indicators and Standing Long Jump are a very significant difference (P<0.01, and sophomore students were significantly better than freshman students; two grades of girls in 800 m race Indicators are significant differences (P<0.05).

In a word, there were significant differences in body function and other physical indexes in the physical condition of college students in different grades, except for significant no differences in body shape index (P> 0.05), and overall showed sophomore students were significantly better than freshman students.

Analysis and Discussion
Analysis on the influencing factors of college students' physique characteristics:
The influence of physical education reform on the overall level of college students' physique: On the whole, the college students' physique level in the Yangtze University is in the passing level, the failing rate is very low, but the excellent rate is also low, showing a "middle ,two less" normal distribution trend. The reason may be that in addition to some students are congenital genetic factors, the moment is in the physical education reform and practice of the run-in period, physical strength, speed and other quality of the practice is obviously insufficient. The overall level of college students' physique is more concentrated [3], resulting in college students' physique appearance of "middle,

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two less" phenomenon.

The effect of relatively simple exercise mode and sports events on the relative strength of the waist and upper limbs of college students in daily exercise: As can be seen from Table 2, college students Chinning (male) /1 minute sit-ups (female) Indicators are far lower than the passing score, indicating that the relative strength of college student waist and upper limb is weak. According to the relevant literature after the analysis, the reason may be self-training methods and the project is too single, most college students mainly through running, basketball, table tennis and other items to exercise, but not on the waist strength, upper body strength and other body Part of the force to conduct a comprehensive exercise. In Wang Cheng min et al. [4] using the questionnaire survey of 200 college students, after the study found that: college students exercise, the choice of sports on the main trend of the ball and running, movement mode and the project are generally more simple.

The influence of unhealthy living habits on the body shape of college students: The normal number of girls in the body shape was significantly higher than the boys, The reason may be due to the recent years, girls for their body shape requirements are getting higher and higher, the law of rest time, and actively participate in fitness, sports and other activities caused. And most boys through High school to university environment changes, suddenly relax, life and rest irregular, addicted to the game, do not exercise caused. Studies have shown that [5], from the contemporary female college students in the basic requirements of fitness, found that contemporary female college students in the prevalence of fitness, fitness, fitness needs of the characteristics of one type. Another study shows that [6], college students, bad habit of living habits, and there are gender differences, men tend to live and work irregular, no spirit, no movement.

The influence of changes in sports environment on physical function and physical quality of college students: College student physical fitness and function at all levels of the ratio are reflected in the second grade college students better than the first grade college students. There are more reports on the differences in the physical condition of the different grades college students, such as Ding Tao et al. [7] found that sophomore students in physical and physical function than the freshman has improved, but to the third grade declined; In addition, Huang Nianan et al. [8] survey of college students also found that the sophomore year is better than the first grade, but the higher grades of college students overall physical condition is a downward trend. The reason may be: changes in the sports environment caused. Freshman students in the university before the high school physical education is generally less, students do not participate in extracurricular sports activities, so students ascended the first year of college, the test of the body of the indicators are relatively poor; university sports environment is good, rich activities, Plus physical education teachers on the physical strict requirements, morning exercises, setting-up exercises well organized and other sports activities carry out better, to ensure that exercise at least 1 hour a day, after a year of exercise, the students' physical fitness has greatly improved, When the body of the indicators test data will increase the rate of larger.

The countermeasure of improving the physique health level of college students:
The use of hierarchical teaching in physical education: For the period of physical education reform, the physique level of college students in the overall emergence of this "middle more than two less" normal distribution trend, can be used in the sports class using hierarchical teaching to effectively alleviate this trend. Guo Ying et al. [9] through the 1100 students for three semesters of repeated teaching experiments found that: the hierarchical teaching of physical education can mobilize the initiative of students at all levels, so that excellent people can develop to a higher level, so that the weak practitioners have the confidence to get more benefits. So, as to improve the overall physique level of college students.

Increase the campus public sports facilities, regularly to the sports enthusiasts to carry out activities to learn emerging exercise mode and sports events: In the idle area of the campus, the purchase of a variety of horizontal bar and parallel bars, simple fitness equipment and other public sports facilities; colleges and universities actively encourage sports professional educators to organize sports-loving student groups to learn a variety of sports and emerging sports.

To enhance the harm of bad habits of publicity, create a good living law of the campus environment: Campus on a regular basis to carry out the harm of bad habits as the theme of the publicity; Standardize the student dormitory electricity and the use of the network situation, such as: at 11:30 pm, the school student dormitory closes the power

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and the network, so as to create a good law of work and rest. The type of goods within the supermarket to regulate, limit fried, puffed, three non-branded food sales, to encourage the sale of fresh fruit and dairy products, thus shaping a good eating environment.

Strengthen the high school campus on the student sports environment attention, The college students physical test scores as one of the indicators of assessment scholarships: According to the situation of the students' physique in different students, the students' physical fitness test in the area can be used as an important reference factor for students' admission to the students who have relatively poor average physical fitness test. The total score by a certain weight is to join the total score of the assessment scholarship, so as to improve the students for their own physical level requirements.

CONCLUSION

- The physical condition of college students in the passing level, the overall showing a "middle, two less" normal distribution trend.
- The relative strength of the waist and upper limbs of college students is generally weak.
- There are significant differences between the physical characteristics of different sex college students, and girls are better than boys.
- There are significant differences between the different grades of college students, and sophomore is better than freshman.

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