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## Students physique test and their physical health correlation analysis

Shoubin Li<sup>1\*</sup>, Xueheng Li<sup>2</sup><sup>1</sup>Institute of Physical Education, Changchun Normal University, Changchun130032, Jilin, (CHINA)<sup>2</sup>PlAAF Aviation University, Changchun130000, Jilin, (CHINA)

### ABSTRACT

Student is most basic level in sports system construction and also is a most fundamental part; it is one of sports development direct beneficiaries. With the development of sports and upgrading of education problems, students' physical education has gradually upgraded into one of problems that sports circles and education circles common discuss. The paper starts from students' physical health and their sports test results two aspects, and goes deeper researches on students' physical health status, sports schedule arrangement status as well as students' physical education attitudes changes. By investigating Chinese students physical health status and corresponding sports test results, utilizes SPSS software to make chi-square test, it finds that Chinese students physical health is in poor conditions, unhealthy phenomenon of relatively fat, relative thin, too heavy, too thin, malnourished is relative serious, which also affects students' sports test results to a certain extent, so brings sports test into students results and comprehensive evaluation system, is an important measure that beneficial to students all-round development. By investigating students' sports time arrangement status, it finds that students physical education attitudes changes are great by implementing sports test, Chinese students sports activities are basically arranged in physical education courses, it mainly school monitoring and voluntary exercise have effects, their duration is basically 30min~1h and 45min~1.5h, which is relative longer.

### KEYWORDS

Students' physiques; Physical health; Sports test; Chi-square test.



## INTRODUCTION

Since new curriculum reformation, sports test has gradually fused into main factors of evaluating students' comprehensive levels. In students' comprehensive education system, physical education as a kind of comprehensive event that integrates entertainment, games, exercises, and fitness, is gradually affirmed by education circles.

Bring sports test into students' comprehensive test subjects is a kind of reformation measures of education department new methods in recent years. For the measure, insiders and outsiders have made many discussion, therefore it leads to a series of problems as whether sports test should be brought into students' comprehensive test, whether the measure is valuable or not and so on. For example, Chen De-Qin went deeper analysis of Chinese senior high school entrance examinations' sports examination, his article "Chinese senior high school entrance examinations' sports examination scanning", by investigating Chinese senior high school entrance examination changes after adding sports exam in recent years, specific researched sports exam impacts on senior high school entrance examination, and made comprehensive statement from students, schools and others multiple perspectives, the paper pointed out that senior high school entrance examination's sports exam was a reflection of students comprehensive abilities, and also necessary factor to evaluate middle school students all-round development in morality, intelligence, physique and aesthetics aspects, adding sports element in senior high school entrance examination was great reformation in China's senior high school entrance examination, and meanwhile it was also a correct measure to break through the situation that cultural course took the main proportions.

For sports test impacts, they not only upgrade students' physical quality, but also play decisive roles in students' mental health. Under huge learning pressure, many students minds become distorted due to not able to bear learning pressures, their physical and mental health is seriously affected. With respect to this, many scholars analyze sports test effects on them. Li Xiao-Dong analyzed senior high school entrance examination's sports examination reformation effects on physical education, his article of "Research on Beijing city senior high school entrance examination sports examination reforming impacts on junior high school physical education", took Beijing city senior high school entrance examination sports examination as an example, developed research on sports examination impacts on junior high school physical education.

The paper on the basis of referencing lots of literatures, by investigating students' sports test results and their physical conditions, and analyzing students sports test results, sports activities time and their physical health status correlations, it evaluates students' physical education attitudes changes and their physical conditions changes after sports testing, finally affirms that sports test is a kind of important measure that is beneficial to students' all-round development.

## RESEARCH BACKGROUND AND SIGNIFICANCES

Construction of physical education system is a key to physical education, and meanwhile is also final target of school, students and parents three groups evaluation on physical education. In addition, physical education system, physical education standards and physical education contents are relative important three parts in physical education system construction.

For Figure 1 research, it is clear that school, students and parents are one of important links in physical education, as physical education final beneficiaries, students are crucial. With respect to this, the research targeted at students such a group, analyzes physical education importance from the perspective of students' physical health.

For researches on students group, it not only solve physical education problem on the most basic level, but also is a brand new reformation of physical education. Therefore, the paper goes deeper

research in students, and puts forward following research background and research significances, now statement is as following.

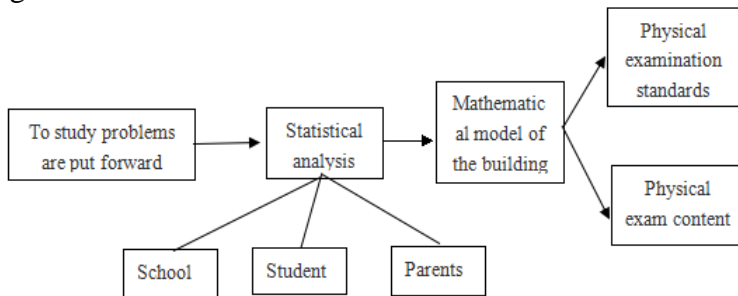


Figure1 : The flow chart

**Research background**

Research on students group, now put forward following research background:

- 1) Students education problem has increasingly become focus of society, students are future of a nation, whether they can healthily grow is very crucial;
- 2) Students’ healthy growth has become top priority in students education, which is constantly recognized and concerned by people in all walks of life;
- 3) In current stage, physical education have become more and more important, physical education problem also becomes key points in education circles, whether can more thorough carry on physical education has become an important task for educators;
- 4) Sports test is one of students’ comprehensive quality evaluation criterions, current stage more and more schools bring sports performance into students’ total performance.

**Research significances**

For above research background, now it puts forward following research significances:

- 1) Research on students’ sports test, it is beneficial to observe students’ physical education progress, and more thorough carry on students physical education;
- 2) Fuse sports test into students’ comprehensive performance, it is helpful for studying students’ all-round development status, and propose questions on current status;
- 3) Sports test is a compulsory measure to propel to students to pay attention to physical education; carry on sports test restricts students’ physical exercise habits to a certain degree.

**STUDENTS BASIC INFORMATION**

**Students physical health status statistics**

With improvement of economic conditions, students’ learning conditions get better, many parents provide good conditions for children and nutrition collocation is also very sufficient so as to provide children a good learning environment and let children to have more time to learn, but in such sufficient nutrition collocation, many children have no time to take physical exercise due to heavy learning pressures, physical status appears risks, obesity, too thin and other phenomenon frequently occurs.

TABLE 1: Students physical conditions statistics

	Relatively fat	Relative thin	Too fat	Too thin	Obesity	Under-nutrition	Normal
Percentage%	5	7	5	6	24	4	49

Above statistics TABLE 1 is established on the basis of students' physical basic conditions investigation, researches on investigation result should adhere to reliability principle that statistical result has analytic values and significances. With respect to this, utilize SPSS software to carry on reliability analysis on it, define its reliability as TABLE 2.

**TABLE 2 : Reliability statistical quantity**

Cronbach's Alpha	Standard term-based Cronbachs Alpha	Number of terms
.725	.811	7

Because when  $0.7 \leq Cronbach \alpha = 0.725 < 0.9$ , statistical result is very reliable, so it can be used for next step analysis.

### Students sports test statistics

Students' sports test is one of indicators to test students' physical quality, and meanwhile is one of important paths; it divides students into poor physical conditions students and normal physical conditions students' two groups, and respectively contrast two groups' students sports results status, by comparing their differences and then analyzes sports test importance.

**TABLE 3 : Students sports test result status**

	Poor physical conditions students				Normal physical conditions students			
	A	B	C	D	A	B	C	D
Sports result grade								
Percentage%	11	64	24	1	22	72	4	2

Above statistics TABLE 3 is established on the basis of students sports test results investigation, researches on investigation result should adhere to reliability principle that statistical result has analytic values and significances. With respect to this, utilize SPSS software to carry on reliability analysis on it, define its reliability as TABLE 4.

**TABLE 4 : Reliability statistical quantity**

Cronbach's Alpha	Standard term-based Cronbachs Alpha	Number of terms
.731	.820	8

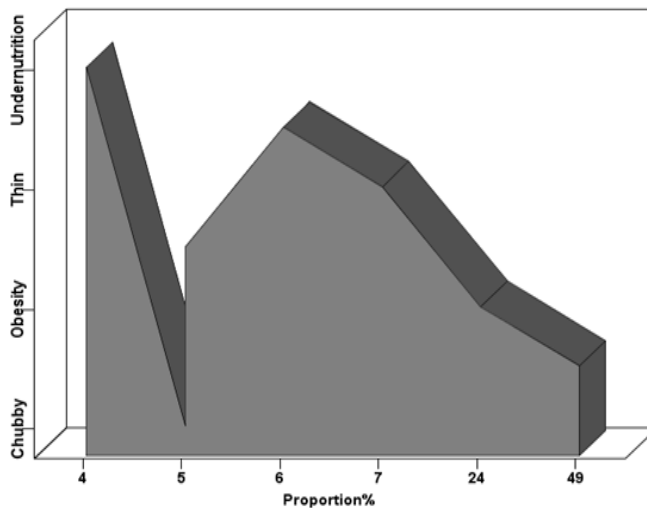
Because when  $0.7 \leq Cronbach \alpha = 0.732 < 0.9$ , statistical result is very reliable, so it can be used for next step analysis.

### $\chi^2$ TEST-BASED STUDENTS' PHYSICAL HEALTH AND SPORTS TEST CORRELATION SIGNIFICANCE COMPARISON

$\chi^2$  test represents statistical sample actual observation value and theoretical inference value deflection extent, deflection extent decides  $\chi^2$  value size,  $\chi^2$  value gets bigger, it turns to be more inconsistent ; deviation gets smaller,  $\chi^2$  will get small, it will turn to be consistent, if quantities are completely the same,  $\chi^2$  value is 0, it shows theoretical value completely conforms.

**Students’ physical health status**

Students are one of key items in physical education system, for students’ physical health status, TABLE 1 has already carried on statistical investigation and reliability analysis, with respect to this, it further utilizes probability statistics  $\chi^2$  test, its test result is as following Figure 2 shows, and makes comprehensive analysis of the result.



**Figure 2 : Student physical health**

For above students physical health conditions statistical graphics, now it can get following conclusion:

- 1) In Chinese students, the occurrence of relative fat, relative thin, too fat, too thin, malnourished unhealthy phenomenon are overall more that occupy 51% of investigated students;
- 2) In statistics, normal physical health status students only occupy 49%, which more proves Chinese students’ physical health status is very poor ;
- 3) By statistics investigation, it is obviously that Chinese students’ physical health status is relative poor, causes are mainly because of excessive big learning pressures and little physical exercises time.

Utilize SPSS software to test above TABLE 1 data with  $\chi^2$ , test result is as following TABLE 5 and TABLE 6:

**TABLE 5 : Descriptive statistical magnitude**

	N	Average value	Standard deviation	Minimum value	Maximum value
Proportion%	7	14.29	16.830	4	49

**TABLE 6 :  $\chi^2$  test statistical magnitude**

	Proportion%
Chi-square	.714a
Df	5
Approximation significance	.982

a. 6 units (100.0%) have expected frequency that is less than 5. Unit minimum expected frequency is 1.2.

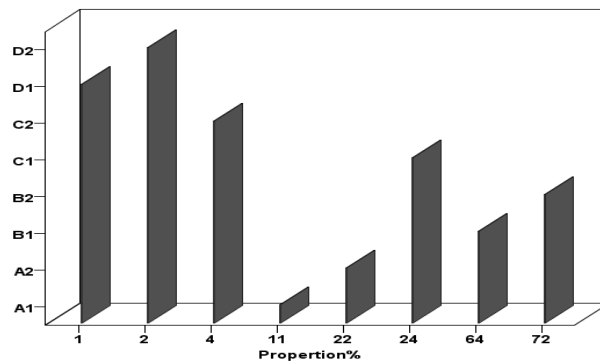
Above  $\chi^2$  test result indication:

Students' physical health suffers very significant sports influences, in students' body most directly and obviously boy features presentation, sports impacts on their fat or thin are very obvious.

Thereupon, promote students physical health, let them to accept education, learn theoretical knowledge in sound growth, physical education is an indispensable item of them, which has great effects on their all-round development.

**Students sports test result**

Whether students physical education development is rapid or not, students focus on physical education or not, the most direct presentation is their sports test results, with respect to this, targeted at data TABLE 3 statistical results, now do  $\chi^2$  test on them, and make next step deepen analysis of the result as Figure 3.



**Figure 3 : Student sports test scores**

For above students sports test result status statistical Figure 3 showing, now it can get following conclusion:

- 1) Normal physical status students' sports results are relative higher, which has very important relations with their participation in sports activities and physical exercises;
- 2) Poor physical health status students, their sports results are poor, affected by daily sports behaviors habits, these students only regard physical education as a kind of test, and haven't really understood sports test real connotations, so achieved effects are not so remarkable.

Utilize SPSS software to do  $\chi^2$  test on above TABLE 3, test result is as following TABLE 7 and TABLE 8:

**TABLE 7 : Descriptive statistical magnitude**

	N	Average value	Standard deviation	Minimum value	Maximum value
Proportion%	8	25.00	27.985	1	72

**TABLE 8 :  $\chi^2$  test statistical magnitude**

	Proportion%
Chi-square	.000a
df	7
Approximation significance	1.000

- a. 8 units (100.0%) have expected frequency that is less than 5. Unit minimum expected frequency is 1.0.

Above  $\chi^2$  test result indication:

1. Students' sports test results and students' physical education correlations are very remarkable, which has no big deviation with actual theory; therefore result conforms to actual statistics.
2. Thereupon, bring sports test into students result and comprehensive evaluation system is an important measure that is beneficial to students' development, it should pay more attentions to sports test proportions in future and promote its all-round development.

### STUDENTS SPORTS ACTIVITIES TIME STATISTICAL ANALYSIS

Students' sports test result high or low directly affects their physical health status, and the key that affects sports test is their sports activities time distribution. Below TABLE 9 is statistics of Chinese students' sports activities time, the statistics are from questionnaire survey and relative literatures.

TABLE 9 : Students' sports activities time statistics

	<10minutes	10~20 minutes	20~30 minutes	30~60 minutes	>60 minutes
Percentage%	0.98	0.66	1.64	16.89	79.84

In statistics TABLE 9, Chinese students' sports activities time is mostly above 60min, little students sports activities time is within 30~60min, which shows sports activities positions have gradually improved in Chinese students' consciousness, students' sports activities frequency is obvious increasing.

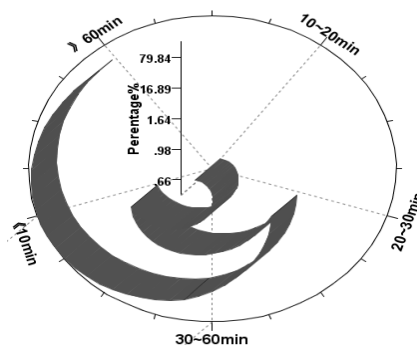


Figure 4 : Time statistics student sports activities

As Figure 4, for above statistics, now it puts forward following conclusions:

- 1) Students are carriers of physical education development, improve their sports activities time is basic measures of guaranteeing students' sports behaviors at root;
- 2) Students' physical education is a most basic and also most crucial links in physical education development, do good jobs in students sports activities advertising is helpful for driving the whole system all-round development;

#### Students exercise time arrangement

On the basis of analyzing students physical exercise time, it makes statistics of students' sports activities time arrangement status, as following Table shows.

In statistics of students sports activities time arrangement, it finds students sports activities basically arrange in physical education course, it is mainly school monitoring and voluntary exercises taking effects, their duration is also longer as 30min~1h and 45min~1.5h. In general, students participate in physical exercises are mainly with test items, as TABLE 10.

**TABLE 10 : Students’ sports activities time arrangement**

	Voluntary exercise	School monitoring	Parents monitoring	Classmates effects	Else
Exercise time	Arrange physical education courses, once per day or per two days	Physical education course, occasionally in the evening	Physical education course, occasionally in holidays	Occasionally in evening, holidays	Extra tutoring
Exercise duration	45min~1.5h	30min~1h	1h~1.5h	30min~1h	2h
Exercise adopted items	Test items, diversity	Test items	Test items	Diversity	Test items

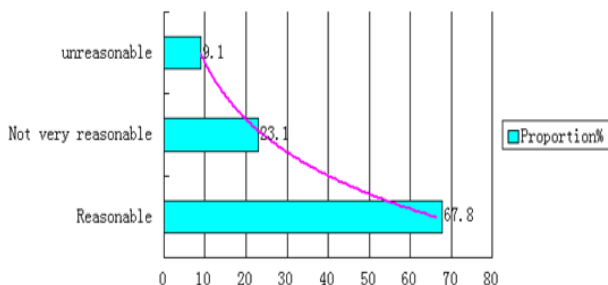
For above statistics TABLE 10, it can discover following problems:

- 1) Students physical exercises suffer greater impacts of sports test, their voluntary exercises time mainly is arranged in physical education course, and little in spare time;
- 2) Students’ physical exercises duration is little, main purposes to take physical exercises are still for sports test and improving results.

**Students attitude towards sports results being brought into senior high school entrance test results**

In research of students’ sports attitudes, it cannot dispense with sports test results analysis. With sports tests gradually fuses into students’ comprehensive result evaluation system, physical education positions are growing, students emphasis extent on sports has also changed from previous don’t care to presently very important.

Though sports test becomes more and more important, social discussion about adding it into total results never ceases, someone think it is very necessary, and others disagree with it. Below Figure 5 is correlation data about bringing sports test into students test results that statistics in the perspective of students.



**Figure 5 : Students attitude towards physical examination’s examination results**

By investigation on students, it is very obvious that most students think bringing sports test results into total results is reasonable, only 9.1% students don’t agree with it. It shows physical education reformation is not thorough executing, sports test as a part of judging students’ comprehensive ability, it hasn’t been concerned and supported by broad students and, with respect to this, it should enlarge publicity of sports test importance.

**Sports test efficiency**

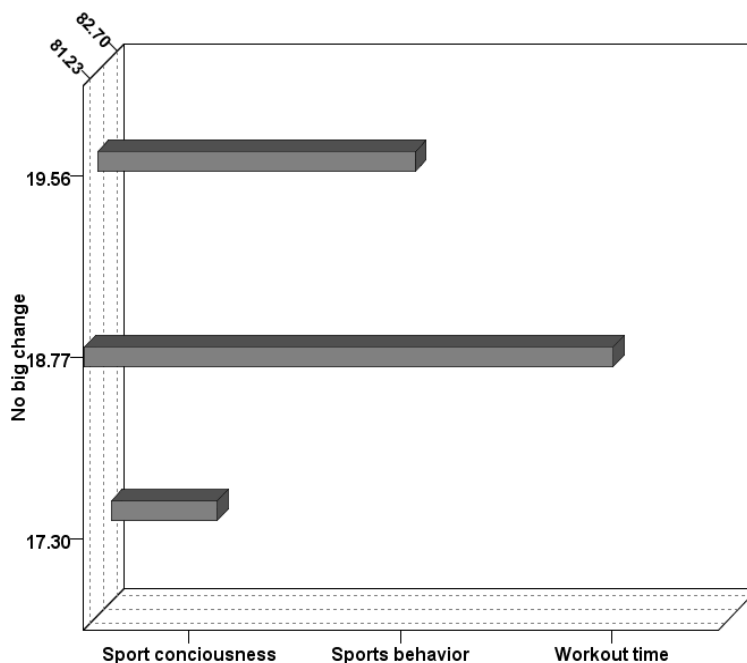
Observe whether sports test reformation has certain efficiency; it should make investigation from most basic students group. Students’ sports awareness, sports behaviors changes are good evaluator indicators. To further observe sports development efficiency in students group after implementing sports test, now make statistics of students’ sports awareness, sports behaviors, sports exercise time three items, statistical result is as following TABLE 11:



**TABLE 11 : Statistical data**

		Percentage%
Sports awareness	Change is great	82.70
	No great changes	17.30
Sports behaviors	Change is great	80.44
	No great changes	19.56
Sports exercise time	Change is great	81.23
	No great changes	18.77

In above statistics TABLE 11, students have great changes in sports awareness, sports behaviors, sports exercise time three aspects, basically are above 80%, proportion that has no great changes is less than 20%, thereupon, sports test has very obvious effects on students.



**Figure 6 : The effect of physical examination**

As Figure 6, for students sports attitude changes, now it puts forward following two conclusions and relative suggestions :

- 1) Students sports attitude changes are benefit from implementation of sports test in great extent, fuse sports test into students daily comprehensive results, it arouses students’ sports exercise enthusiasm in a certain side, and meanwhile it also lets school physical education course proportions to increase;
- 2) Compare with students sports behaviors changes, it proves bringing sports test into students comprehensive test is a correct measure, the measure can improve students’ physical health status, reduce occurrence of students too thin, too heavy and other unhealthy status, it propels to students healthily growth.

**CONCLUSION**

By above researches on students’ physical education basic information, it totally can get following conclusions:

(1) Students' physical health is closely linked to their sports test. By investigating Chinese students physical health status and corresponding sports test results, and utilizing SPSS software to do  $\chi^2$  test analysis, finally it finds: Chinese students physical health is in poor conditions, unhealthy phenomenon of relatively fat, relative thin, too heavy, too thin, malnourished is relative serious, which also affects students' sports test results to a certain extent, so brings sports test into students results and comprehensive evaluation system, is an important measure that beneficial to students all-round development.

(2) Students sports time arrangement status is direct influence factor of their sports test results being high or low. By investigating, it finds that Chinese students sports activities are basically arranged in physical education courses, it mainly school monitoring and voluntary exercise have effects, their duration is basically 30min~1h and 45min~1.5h, which is relative longer.

(3) In addition, for sports test status, it carries on students' sports attitude changes statistical analysis, and by researching, it finds by implementing sports test, Chinese students physical education attitudes changes are great, which also shows brings sports test results into students daily comprehensive results is a correct measure.

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