



Research Article

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Comparative study of Chinese and foreign sports ideological development based on SPSS factor analysis

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ABSTRACT

Since ancient times, Chinese traditional culture and thinking have already ingrained in Chinese mind. From beginning to end, we ignore the physical education and just consider that only the cultural achievement will decide everything, which leads to a common phenomenon-the poor body qualities of college students. At present, the way how to improve the overall quality of students and highlight the importance of sports implement has become a key problem of present education. In this paper, we use the method of comparative analysis, combining with the concept of development to make a comparative study on Chinese and foreign sports thoughts by starting from the combination of physical education and health curriculum aspects and introducing several representatives of physical education teaching methods and Chinese teaching thoughts. We use factor analysis method to analyze several physical education modes in order to discuss the development prospects of sports thoughts at home and abroad, and further, we put forward that Chinese sports should draw lessons from foreign sports education ideas. It also emphasizes that the development of physical education teaching is the model of lifelong education, and the key lies in the students' healthy development, which will eventually be individualized, specialized, socialized thought through students' study life. Chinese sports should draw lessons from foreign sports education thought idea and emphasize the development trend of physical education is life-long education model.

Key words: Comparison analysis, Factor analysis, physical quality, physical health factors, social education

INTRODUCTION

With the rapid development of the national economy, the quality of people's life has improved significantly, and the spiritual and cultural needs of the masses have become larger and larger. Sports service industry has already become an indispensable one for national economic progress of the industry. At present, people's consumption in sports has become a priority among daily consumptions. Even so, the status of physical thought is still not optimistic in Chinese people's mind [1-5]. Therefore, this paper carries on analyzing the ideological of Chinese sports condition according to the comparison of Chinese and foreign sports thought, and makes the strategy for its future development [6-9].

As the theoretical foundation of the physical education, the sports teaching theory dates back to the Confucius "six arts" and the Moral of Lao Tzu [10-14]. After the Revolution of 1911, May Fourth Movement, and reform and opening up, now the sports teaching theory has gradually become an independent subject. However, as the science research of sports is relatively backward, the discipline orientation of sports teaching theory, the research of basic category as well as the object research will become the focuses of the studying in a certain period of time. In addition, with the rapid development of Chinese sports school, new problems and barriers arise in physical education, which will promote us to reflect on the previous studying methods and research category.

The current world knowledge economy occupies the leading position of international economy; therefore, all the

countries in the world will adjust and reform their education to cultivate the available talents who are more adapted to meet the needs of the development of social knowledge economy. Combining with the development of the concept, this paper makes comparative study of Chinese and foreign sports thought through horizontal and vertical analysis. Further, it provides a theoretical basis for the comparative study of Chinese and foreign sports thought by using the method of factor analysis.

MODEL BUILDING

Throughout the development history of Chinese and foreign sports, the ideologies of physical mainly show the physic development trend, and carries on innovate the nature , function and teaching mode with the development of economic and culture, as shown in figure 1.

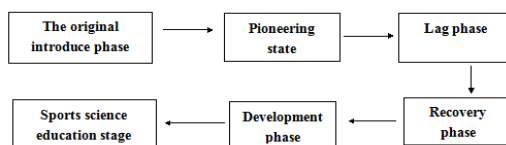


Figure 1: The development of Chinese Sports

Foreign thought and development of Physical Education Teaching

Unlike Chinese physical education, foreign physical education pays more attention to the thought that physical education can power the country, and it has occupied an important position in the minds of foreigners. They take sport as an indispensable part of daily life. In their spare time, exercise has been used as entertainment; it can also improve the qualities of health and life, which is also thought as an important way to strengthen the health of body and mind, as shown in Figure 2.



Figure 2: A variety of physical exercise

The characteristics of physical education teaching reform in foreign countries

Physical education is the key to school education, and it is also the foundation of the building of Chinese sports, which is the priority among priorities of a country changing into a world sports power. With the popularization of sports educational reform, the reform mainly shows that the main common trend and the common characteristics:

In the organization of the teaching material and the choice of teaching content, we are asked to pay more and more attention to the sports culture contained in the sport without neglecting the basic requirements of physical value of sports. And through the use of cultural factors in sports to promote the formation of people's moral issue, socialization and personality development, we reorganize and process the teaching materials; in the organization of teaching, we emphasize the importance of interaction between students, like the help and learn from each other, and we pay attention to the sports teaching and the students' life as well as the extracurricular activities. Furthermore we highlight the interactions between students. In addition, the diversity of teaching forms help to promote the cultivation of students' thinking ability. As a result, the tendency of humanistic and sports natural sports will be once again formed by new social conditions and environment.

The first half of the twentieth Century, American generalist education thinker Hutchins saw that (the general sports in the early date was also known as ordinary sports), a series of educational puzzle had aroused with a rapid development of industrial civilization in the America, and re- summarized that the liberal education was defined as the higher and deeper study which was "specializing in mold for general education and basic education". It is an important characteristic guiding ideology of higher education and the general physical education thought has also been given a new meaning, as shown in Figure 3.

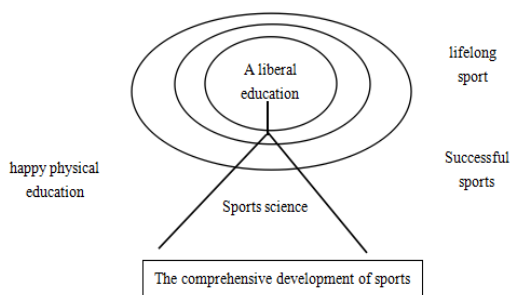


Figure 3: Comparison of various sports thought

According to the various similar characteristics of the high development period of US and EU industrial civilization and on the reference of the need of college sports development in contemporary China and twenty-first Century, we can get a conclusion that in various sports thought, all-round development of sports is the basis, successful sports and happy sports are the two wings, scientific sports are the standard and the power source, and the general sports is the top ridge.

Development and shortage of domestic sports

The contemporary society is a society in which the sustainable economic develops soon and the reform of higher education deepens rapidly, and the enrollment of college expands largely. At present, Chinese sports have to learn from foreign sports education idea and inherit the outstanding composition of Chinese physical education, and thus build up the new construction of the teaching idea. With the continuous development of scientific outlook on development, the identity of sports humanistic spirit will become the significant mark of large changing stride across the century and the Chinese sports thought will join into the world of sports.

Today's social development presents some basic features, like the sustainable economic development, investment in intangible assets and the network of information transmission, lifelong education and leisure of life, which put forward new requirements of the principles and approaches of the reform and development of education, the school personnel training, and how to adapt to the future social development and social needs. These new urgent problems which are really needed to be solved also are faced by our school sports now. At present, Chinese school sports mainly present the unstable theory foundation and the lack of their own characteristics.

(1) Small proportion of sports discipline

At present, Chinese education mainly focuses on the culture and education. Physical education occupies a small proportion in the semester of their lessons, and the figure below is the comparison of sports class in university school semester.

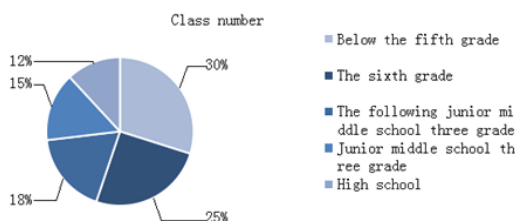


Figure 4: A comparison of college physical education class

From figure 4, we can analyze that the sports teaching is not taken as a key goal of education in today's Chinese primary and secondary school. Physical education is not formed a certain concept and has not received due attention in teachers', especially students' minds.

Therefore, the school sports curriculum must do some developing adjustments and combine the happy sports and lifelong sports ideology minds in the classroom. We should not only respect the subject status of students, but also pay attention to stimulate students' independence and sense of innovation so as to form their ambitions and habits of lifelong practicing sports.

(2) The abstract subject goal of sports

According to the survey, most PE target content are very abstract and broad in Chinese primary and secondary school, and it basically is: to master the basic knowledge of sports, health, hygiene, simple sports project, to enable

students to develop the habit of physical exercise and enhance physical and mental health, to help to enhance physical fitness, and to strengthen the sense of discipline as well. What is more, it teaches the students to be youthful, positive and optimistic. No explicit provisions should grasp the sports and the master degree.

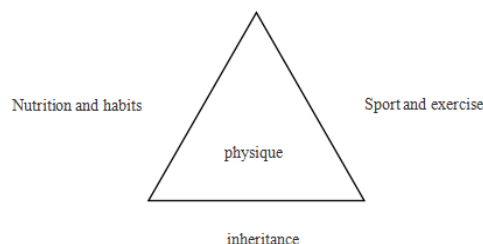


Figure 5: Physical map effect on students' physique

Figure 5 is the degree of the influence of sports on the physical fitness of students made by some scholars; they believe that the influence of sports on students is $1/3$. Thus, we can see the quite large effect of sports on students' physical quality.

(3) The singleness of the opening sports project

The school sport is the key step to construct China into a sports power country in the world, as it is, it is the basis of national sport. At present, the sports project that has opened in Chinese primary and secondary schools are mainly football, volleyball, basketball, table tennis, badminton, handball, golf, hurdles, running, javelin, long jump, high jump, springboard, equestrian, bicycle, martial arts, sailing, fencing, judo, leather craft, shooting, archery, walking sword, lifting weights, swimming, tennis, and wrestling. However, in most areas the sports opened in Chinese's colleges and universities is still the traditional project. The ideology of diversification of sports is not fully put into the physical education in college. The figure below is the number of opening college major sports.

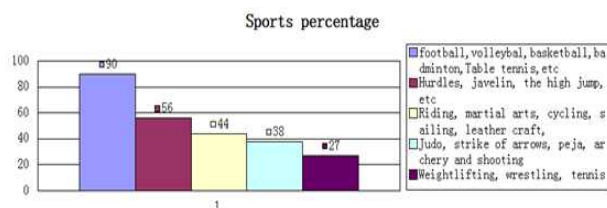


Figure 6: Sports offered species percentage

PROSPECTS FOR THE DEVELOPMENT OF DOMESTIC SPORTS EDUCATION BASED ON FACTOR ANALYSIS MODEL

The basic idea of factor analysis method is taking many primitive variables into a few hypothetical variables on the relative study of various variables, so that these variables will have a strong conviction. The general model of factor analysis is:

$$\begin{cases} X_1 = a_{11}f_1 + a_{12}f_2 \cdots + a_{1m}f_m + e_1 \\ X_2 = a_{21}f_1 + a_{22}f_2 \cdots + a_{2m}f_m + e_2 \\ \cdots \\ X_k = a_{k1}f_1 + a_{k2}f_2 \cdots + a_{km}f_m + e_k \end{cases}$$

In the formula e_i is specific factor and it only works on the corresponding X_i . f_1 is a common factor. They are two-two orthogonal. a_{11} , correlation coefficient, is the load variables of the i of several variables to the j factor which is also the load of the public factor. The smaller the load is, the weaker the relationship between i variables and the j factor is. On the contrary, the larger the load factor is, the stronger relationship between i variables and the j factor is. Special factors are the residuals between the measured variables and estimated value, as it is, it is the variables part of the common factor that cannot be explained.

Initial data

The variables in the model are the teaching model of sports skills (No. 1), happy sports mode (No. 2), the success of

physical model (No. 3), and lifelong sports mode (No. 4). In the percentage of national primary and secondary school education investment, the development of random variables are the development of sports service industry this year, and the data is from the Bureau of Statistics Statistical Yearbook, as shown in table 1.

Table 1: Different education mode of Physical Education

	Education mode	Physical education investment	class number of Physical education	the type of sports class
1	The teaching model of sport skills	2.46%	20	10
2	Happy teaching mode	2.52%	24	15
3	The success of the teaching mode	2.89%	28	18
4	Lifelong teaching mode	3.18%	36	27

Model building

We get the conclusion that the highest score has influence on physical education teaching by comparing the comprehensive scores of the 4 kinds of teaching models through factor analysis. So we find out the mode of developing sports teaching that should be taken in the coming period of time in China.

(1) The correlation test index

The basic premise of factor analysis is a certain correlation between each factor index. The data are analyzed by the SPSS software, and we obtain the following Table 2. It can be seen from the table below that there is a strong correlation between the indexes above. We need to analyze them again through factor analysis on the above index to reduce and avoid the index between the correlations among them, so as to minimize the impact on the experimental results.

Table 2: factor correlation matrix

		Correlation matrix		
		Physical education investment	class number of Physical education	the type of sports class
Relevant	Physical education investment	1.000	.743	.555
	class number of Physical education	.743	1.000	.921
	the type of sports class	.555	.921	1.000

(2) The analysis of public factor

The load factor is the correlation coefficient between the public factor and indicator variables. When the load is the greater, it illustrates the relationship between indexes and factors are more closely. In determining the number of common factors, first we should select the same number of initial variables of the number of factors, and then calculate the total variance so that we get the results shown in the table below. The value of initial features which is more than 1 is the public factor. As is shown in table below, there is only one that meets the condition: the contribution rate of cumulative variance is 87.794%, which covers the majority of variable information. Therefore, we should select the first factor as a common factor.

Table 3: factor analysis of variance tables

The explanation of total variance						
		Initial eigenvalue		Extraction of square and load		
element	summation	Variance %	cumulate %	summation	Variance %	cumulate %
1	4.390	87.794	87.794	4.390	87.794	87.794
2	.545	10.903	98.697			
3	.065	1.303	100.000			

Extraction method: principal component analysis.

And through the table 3 we know the function of index variables of extraction of principal component is:

$$y = 0.172 * x_1 + 0.223 * x_2 + 0.219 * x_3$$

Thus, we get a comprehensive evaluation model of the further principal component: $Z = \frac{4.390 * y}{0.8794}$

The following table 4 is the calculation of comprehensive scores.

Table 4: The comprehensive score of several education modes

Education mode	Factor score	Comprehensive score
	y	Z
Physical model of educational skills	3405.6	1.702928
Happy teaching mode	2512.6	1.256379
The success of the teaching mode	1154.0	0.577063
Lifelong teaching mode	5193.4	2.596885

Through the analysis in the table 4, the model of lifelong education gets the highest scores. It is the most influential one comparing with other education mode and it becomes tendency of Chinese sports education development in the future.

CONCLUSION

Firstly, this paper analyzes the physical education transversally and evaluates the influence the physical education of through the comprehensive score of lifelong education model quantitatively. We carry on the comprehensive evaluation from the number of sports physical education investment, the time of sports class, and the number opening class so as to find out that lifelong education mode is the tendency of development of physical education in China.

Chinese thought of sports is influenced by foreign thought a lot, and great changes have taken place in social economic and political status in China today. We should learn some beneficial part of foreign physical education ideas from the developed countries, and combine them with the Chinese physical education ideology to put forward the key physical education which lies in the students' healthy development. And then we bring individualization and special socialization into students' study life eventually. In this paper, we draw the conclusion by using the methods of comparative analysis and factor analysis throughout the development in the Chinese and foreign sports thought. We think Chinese physical education should focus on the lifelong physical education, combining with the social function, psychological function, to start the feasibility study for the future prospects of the Chinese college physical education.

Through the study of the physical education of China and foreign countries, we get the conclusion that the future sports will take the lifelong sports as the master line, and develop with a diversified trend. Then we put forward some constructive suggestions:

- (1) We should do some constructive adjustments to the school physical education curriculums. Take the lifelong sports, happy sports concept into the classroom. On the basis of respect their own position, we should emphasize on encouraging students' independent learning ability and learning innovation, and help the student form a habit and willing to participate through their life.
- (2) We should regard the students as the main body status in physical education teaching, building up the harmonious development of student personality and pursuing a harmonious relationship between teachers and students so that it can let the students understand that the sports teaching activity itself should be pleasant and of great attraction. Happy sports can not only satisfy their desire to learn and stimulate students' interest in sports, but also helps to improve the student's physical quality, which will be the foundation of the promotion of sports ability.
- (3) In the foundation of sports development, we also need to cultivate the sports social consciousness from the aspect of the overall strengthening of system of sports knowledge according to the characteristics of the future sports development. We should combine the physical psychology, sports psychology, and future technology with physical education further to strengthen the urgent physical education and set up a strong information consciousness. Also we need to pay attention to train the ability of physical education; and strengthen the in-service teachers especially of physical education teachers' continuing education.

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