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Research Article

Integration Validity of Sports Industry and Education Based on National Fitness

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Abstract

This paper studies the physical education in schools and for social mass, analyzes the positive role of universities, social groups and civil organizations in China's national fitness strategy and further promotes investigates the integration of sports industry and physical education promoting the national fitness through questionnaires. The questionnaire is mainly evaluated using the validity analysis method to ensure the validity of the results. The analysis results show that at present, China's national physical education is still in the early middle and stage of development, and it is still necessary to activate the market and establish a sound industrial chain by optimizing industrial policies.

Keywords

National Fitness Strategy • Sports Industry and Physical Education • Validity Analysis •
Optimization of Industrial Policies

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As one of the most populous countries in the world, developing sports cause and strengthening the physical fitness of people are the basic tenet for the development of sports in China. It is also an important way to achieve the universal health, the basic guarantee for the whole people to enhance their physique and live happy lives and the basic elements of social and economic development. In 2014, the national fitness was upgraded to a national strategy in the "Several Opinions on Accelerating the Development of Sports Industry to Promote Sports Consumption" issued by the State Council.

In recent years, China's sports industry has developed rapidly. Some studies have shown that the current sports industry is gradually expanding. For example, the new media of sports generated by Internet technology has challenged the dominant position of TV media and the sports training market has been heating up, thus promoting the participation of new generation sports enthusiasts (Tong & Hawley, 2009). There is still huge potential value space even in the developed regions of the sports industry. At the same time, due to the unbalanced development of sports industry in different regions in China, the demand for sports industry in backward regions is more urgent (Henry & Pinch, 2000). Faced with such a huge market, it is necessary to establish the matching industrial policy and public service system. The establishment of sports industry based on national fitness calls for a comprehensive public service system, including the construction and supply of public facilities for national fitness, the sports management mechanism, the allocation of public service resources and government supporting policies (Shi, Lien, Kumar & Holmboe-Ottesen, 2006). How to obtain public service resources and services and integrate physical exercise with matched knowledge and skills education directly determines the enthusiasm of general public to participate in physical exercise. The sports industry based on national fitness is inseparable from physical education. Therefore, an effective evaluation of the integration degree of the two can not only reflect the current development of the sports industry, but also guide the industrial policy according to the corresponding conclusions.

This paper will analyze the current situation of sports industry and education in China, classify different types of participants, determine the research objects and then collect samples through questionnaire survey. The validity of this survey is analyzed and finally the research conclusions are given.

Research Objects and Methods

Research Objects

At present, the forms of physical education in China mainly include physical education in schools, sports training of social groups and civil spontaneous sports organizations the physical education in schools is the most important part of China's national fitness strategy. Students are the most concentrated, most qualified and guaranteed group of the implement objects and students are usually in the physical development stage, which is the best stage for physical training and education. The physical education in schools can effectively enhance the sports participation of the masses. The sports training of social groups is mainly in the form of clubs, including fitness centers, special training schools, etc. At present, most sports trainings of social groups are for the purpose of profit, providing sports education, sports training and sports service for individuals and

organizations with relevant needs. Civil spontaneous sports organizations are mainly organized by enthusiasts in the region, which will carry out regular activities on specific projects (Suga, Shoji, Oka, Nakamura & Mano, 2011).

The number of participants in various forms of physical education is significantly different. The survey data show that school physical education and civil spontaneous sports organizations account for a relatively large proportion and the proportion of participants in social group sports training is relatively low (Conroy, Elliot & Hofer, 2010). The final questionnaire distribution is about 5:2:3 according to the proportion of participants in the survey. The respondents are all between 12 and 70 years old. At the same time, the participants in the survey also need to have the habit of regular physical exercise and the experience of sports training and physical education to some extent. It is also necessary to exclude respondents who are unable or unwilling to participate in the survey for various reasons, as well as invalid respondents who do not meet the requirements. A total of 613 questionnaires are distributed in this survey. After the survey, all questionnaires are collected and 27 invalid questionnaires (including 8 invalid questionnaires and 19 questionnaires with less than 85% completion rate) are removed. A total of 586 valid samples are obtained.

Research Methods

The questionnaire survey is mainly conducted by means of online and offline surveys, and is filled out by the respondents. Among them, the investigators participating in the study have been trained for half a day to understand the purpose and significance of the survey, master the requirements and methods of questionnaire distribution, filling and collection, clarify individual responsibilities and ensure the accuracy and reliability of questionnaire filling and information collection.

The “Survey on the Integration of Sports Industry and Education Based on National Fitness” questionnaire designed in the study (hereinafter referred to as the “questionnaire”) follows the principle of rationality, generality, logic, clarity, non-induction and ease of organization and analysis of the questionnaire (Albuam, 2000). This questionnaire design consists of 17 self-evaluation items, all of which can be divided into seven dimensions: own situation of the subject, time of physical exercise, sports-related consumption, willingness of sports consumption, physical education, demand of physical education and demand satisfaction. The own situation of the subject is not included in the scoring, but the other six dimensions are scored from 0 to 4 and the cumulative score range is from 0 to 24. The higher the score, the stronger the correlation of the survey subject with sports participation and physical education.

Statistical Processing

The SPSS 22.0 is used for the statistical processing and analysis of data. The attribute evaluation of the questionnaire consists of reliability analysis and validity analysis (Saris & Gallhofer, 2014) and the focus of this study is the analysis of validity. The specific analysis content consists of the following parts: (1) reliability

analysis of internal consistency; (2) structural validity analysis; (3) convergence validity analysis; (4) discrimination validity analysis.

Reliability and Validity Analysis

Reliability Analysis of Internal Consistency

Since the questionnaire adopts the project multi-scoring method, this paper uses the Krumbach α coefficient to evaluate the internal consistency reliability (Peterson, 1994). The α coefficient of the total six dimensions of the survey content is 0.803 and each dimension is positively correlated with the total score. The correlation coefficient is shown in Table 1. The Kleinbach α coefficient of more than 0.6 indicates statistical validity, while the coefficient of above 0.7 indicates that the statistical reliability is high. The analysis results of internal consistency reliability show that this survey is of high reliability.

Table 1

Correlation Coefficient Table of Each Dimension and Total Score of Questionnaires

Dimension	School Physical Education n = 292	Social groups n = 117	Civil Organization n = 177	Total n = 586
1. Physical exercise time	0.518	0.675	0.582	0.826
2. Sports related consumption	0.552	0.627	0.631	0.795
3. Willingness to consume	0.723	0.488	0.715	0.733
4. Physical education level	0.759	0.406	0.633	0.733
5. Physical education needs	0.284	0.519	0.469	0.537
6. Demand satisfaction	0.336	0.664	0.597	0.682

Structural Validity Analysis

The Exploratory Factor Analysis (EFA) method is used for the structural validity analysis in this study (Henson & Roberts, 2006). Firstly, the SPSS (using principal component method) is used for the common factor extraction of the questionnaires and then the common factors are rotated to enable the common factors to have a satisfactory explanation. Through continuous exploration, the factor analysis is conducted for a total of 10 times and 4 items are deleted. The results of factor analysis show that the KMO value of the survey data is 0.871, which is a good level. The X^2 value of Barlett spherical verification is 4541.077 (degree of freedom is 120) and the significance probability value is $p < 0.01 < 0.05$.

The common factors are named according to the characteristics of each common factor. The first common factor explains that the improvement of the program ability of exercisers can increase the exercise time and sports consumption, named as the ability factor; the second common factor explains the learning willingness of exercisers can increase the exercise time and sports consumption, named as the learning factor. The third common factor explains that the exercisers enjoy the fun of sports under the premise of satisfying the skill, named as the fun factor; the fourth common factor explains the improvement of self-identification through the competition among exercisers, named as the competitive factor.

Convergence Validity and Discrimination Validity Analysis

Convergence validity The Spearman correlation coefficient is used for the evaluation of the convergence validity and the correlation coefficient between the total score of each dimension of the questionnaire and its sub-item score of each dimension is calculated to estimate its convergence validity (Gaugler, Rosenthal, Thornton & Bentson, 1987). Through the SPSS, the correlation coefficient between the total score of each dimension and its sub-item score is between 0.45 and 0.79 and the convergence validity is in a reasonable range.

Discrimination validity Discrimination validity analysis includes two parts: divergent structure validity and discrimination convergence validity analysis (Little & Rubin, 2002). Among them, the divergent structure validity analysis is evaluated by the correlation between the survey date, the type of research object and the survey results (Hårdle, Wolfgang & Simar, 2005). The calculation results of the correlation are shown in Table 2. It can be seen from the results of Table 2 that there is no correlation between the questionnaire, each dimension and the research date, but there is a correlation between the type of survey group and the survey area. The absolute value of the correlation coefficient is greater than 0.4, indicating strong correlation.

Table 2
Questionnaire and Divergence Coefficient Validity Scale

Project	Dimension1	Dmension2	Dmension3	Dmension4	Dmension5	Dmension6	Total
Date	0.315	0.201	0.233	0.151	0.186	0.144	0.256
Region	-0.359	-0.298	-0.157	-0.429	-0.258	-0.442	-0.499
Object	-0.274	-0.297	-0.435	-0.294	-0.476	-0.289	-0.468

The analysis of the discrimination convergence validity (Kenny, Mannetti, Piero, Livi & Kashy, 2002) compares the total score of the questionnaires of the three types of survey objects and the score of six dimensions. As shown in Table 3, the physical education demand and demand satisfaction of physical education group in schools is significantly higher than other groups. The sports-related consumption and consumption willingness of the sports training group of social groups is the highest and the score in each dimension of the civil spontaneous sports organizations is relatively low. Table 3 shows that the questionnaire has a good effect on the discrimination of the survey objects.

Table 3
Comparison of Questionnaire Scores of Different Groups

Dimension	School Physical Education n = 292	Social groups n = 117	Civil Organization n = 177	Validity
1. Physical exercise time	3.0 (2.0)	2.0 (1.0)	3.0 (2.0)	-13.09 < 0.01
2. Sports related consumption	2.0 (1.0)	3.0 (2.0)	2.0 (1.0)	-12.18 < 0.01
3. Willingness to consume	3.0 (2.0)	3.0 (2.0)	2.0 (1.0)	-11.26 < 0.01
4. Physical education level	3.0 (2.0)	2.0 (1.0)	2.0 (1.0)	-14.10 < 0.01
5. Physical education needs	3.0 (2.0)	3.0 (2.0)	2.0 (1.0)	-10.68 < 0.01
6. Demand satisfaction	3.0 (2.0)	2.0 (1.0)	2.0 (1.0)	-13.18 < 0.01
Total n = 586	17 (11)	15 (9)	13 (7)	-14.01 < 0.01

Research Conclusions and Discussion

The above research indicates that the design of the survey questionnaire meets the statistical requirements; the reliability and validity are in a reasonable interval; the internal consistency of self-evaluation items in each dimension is good; and there is sufficient discrimination for different types of research objects. The research report is aimed at the physical education group in schools, the sports training group in social groups and the civil spontaneous sports organizations (hereinafter referred to as the research object 1, 2, 3), which mainly investigates the impact of sports ability, learning, fun and competition on the participation in sports exercise and sports consumption. The main conclusions are as follows:

1. The time of sports exercise for research object 1 and 3 is relatively sufficient and the research object 2 is limited in the extension of the exercise time. Although the exercise time is short, the research object 2 has a strong willingness for exercise, so the demand of this group of people can be regarded as a key point for future growth of the sports industry;

2. The research object 2 has strong consuming willingness and consuming behavior. The research object 1 has the consuming willingness but the consuming behavior is limited. The consuming willingness and consuming behavior of the research object 3 are relatively low. Therefore, there is still space for further development for the current situation of sports consumption and the sports consuming willingness of the research object 1 and 3;

3. The demand for physical education and the satisfaction of physical education of the research object are relatively high. There is a great demand for physical education of the research object 2 but the satisfaction degree is relatively low. The demand for physical education and the satisfaction of physical education of the research object 3 are relatively low. It is an important part of exploration to satisfy the diversified demand for physical education of the research object 2 and develop and satisfy the demand for sports education of the research object 3 in the future development of the sports industry;

4. This survey mainly investigates four important factors, sports ability, learning, fun and competition. The results show that there is a positive correlation between each factor and sports participation. That is, the target group can receive corresponding sports services by increasing the content of sports training and enriching the types of sports training so as to actively promote the positive development of the sports industry;

It can be seen from the above research results that although China's sports industry has experienced a long time of development, the physical education and sports services still cannot fully satisfy the demand of the masses for participating in sports activities and this part of the demand plays a significantly positive role in promoting the development of the sports industry. Therefore, optimizing industrial policies, rationalizing the industrial layout, and providing sufficient sports training and physical education services can effectively promote the future development of the sports industry.

Summary

This paper explores the sports industry based on the national fitness strategy, classifies the forms of physical education received by the masses in the sports industry and performs the sample collection in the form of questionnaires for different types of groups receiving physical education. At the same time, this paper analyzes the statistical reliability and validity of the questionnaire and the results to ensure that the survey results satisfy the statistical requirements. The survey results show that although China's sports industry is at a high-speed development stage, the national physical education and sports-related services are in the early and middle stage of development. Improving the level of national physical education can effectively activate the enthusiasm of the masses to participate in physical exercise and improve public participation so as to provide effective support for the national fitness strategy. How to optimize the sports industry policy to further activate the market and improve the sports industry chain in the upstream and downstream is an important issue faced by the development of China's sports industry in the future.

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