Sports Teaching Material Selection in Dynamic Analysis of Big Data--Taking Football Teaching as a Case

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Abstract:

The selection of PE teaching materials is one of the key factors for the success of PE teaching. The traditional physical education teaching material evaluation procedure is tedious, and the evaluation result has certain error. Taking the selection and training of football players in Hebei GEO University as an example, this paper introduces the analysis method of big data and data fusion to study the selection of sports teaching materials. The experimental results show that the evaluation results of the proposed method are more accurate than the traditional methods, and the iteration period is shorter. This method has a certain ability test value for the selection of physical education teaching materials.

Keywords: *Data fusion, Sports teaching,Big data.*

I. INTRODUCTION

There are different opinions on the definition of "big data". In different application fields, experts, scholars, programmers and technical consultants have different understandings and definitions of "big data" due to different concerns [1]. But in general, what we call "big data" refers to the data collection that can not be collected, stored and processed by traditional information collection technology and storage analysis tools in a limited time. In other words, the collection, storage and analysis of "big data" need advanced information collection technology and storage analysis tools [2-4].

Through the research on the selection mode of campus football players based on "big data", this paper explores a successful way of using information technology to mine football talents in China, so as to improve the performance and level of football in China.

Through the research on the selection mode of campus football players based on "big data", this paper uses the concept of "big data" to provide support for the scientific and targeted discovery and cultivation of football talents and the promotion of campus football teaching reform.

II. RESEARCH OBJECT AND METHOD

2.1 Research Object

Based on the "big data" campus football player selection mode.

2.2 Research Method

2.2.1 Documentation Method

In the research process, according to the needs of the research content, this paper uses the library of Qufu Normal University and the Chinese academic journal network to search the relevant literature about "big data" and "young football player selection". And through the method of manual reference, the literature about "big data" and "young football player selection" published by China excellent master's degree thesis database, State Sports General Administration official website, China Football Association official website and FIFA official website were searched and collected. A comprehensive understanding of the related fields of this paper at home and abroad research status and frontier trends.

2.2.2 Questionnaire Survey

2.2.2.1 Design, Distribution and Recovery of Questionnaire

In order to understand the characteristics of the traditional youth football players selection mode, this paper takes the coaches of primary and secondary schools, amateur sports schools and clubs engaged in youth football training as the survey objects, and designs a questionnaire for the effectiveness of the traditional youth football players selection mode, the importance of the selection factors and the problems existing in the selection mode [5-7]. The composition of the coaches investigated is shown in Table 1. The questionnaire was distributed twice with the same target group. 36 copies were distributed and recovered each time, and the recovery rate was 100%.

TABLE I. Composition of coaches

	Total number (person)	Category	Number of people	Proportion (%)
Coach level or title	36	Primary	10	27.8
		Intermediate	21	58.3
		Senior	5	13.9
Education	36	Junior College	3	8.3
		Undergraduate	28	77.8
		Graduate Student	5	13.9
Teaching years	36	≤ 2 Years	3	8.3
		3-5 Years	8	22.2
		5-19 Years	21	58.3
		≥ 20 Years	4	11.1
Age level of the	36	7-17 Years Old	32	88.9

teaching team		18-25 Years Old	4	11.1
		≥26	0	0.00
Teaching post	36	Primary And Secondary Schools	22	61.1
		Amateur Sports School	10	27.8
		Club	4	11.1

2.2.2.2 Reliability Test of Questionnaire

In this paper, the reliability of the questionnaire was evaluated by the method of retest. The questionnaire was filled twice with the same goal, and the interval between the two questionnaires was 15 days. The test-retest reliability is 0.89, which indicates that the questionnaire has good reliability.

2.2.2.3 Validity Test of the Questionnaire

The validity of the questionnaire was determined by expert judgment. Eleven experts engaged in football teaching and sports training were interviewed from Qufu Normal University, Shandong University, Shandong Institute of physical education, Beijing Sports University and Shanghai Institute of physical education. After expert evaluation, the average score was 3.7, which was in a good level, indicating that the validity of the questionnaire was reliable. The composition of University experts is shown in TABLE II.

TABLE II. Composition of university experts

Title	Qufu normal university	Shandong University	Shandong sports institute	Beijing Institute of Physical Education	Shanghai Institute of Physical Education
Professor			1	2	1
Associate professor	1	1	1	2	1

2.2.3 Comparative Analysis

By comparing and analyzing the differences between the traditional youth football player selection mode and the campus football player selection mode based on "big data", the paper explores the necessity of the research on the selection mode of campus football players based on "big data".

2.2.4 Logical Induction

This paper analyzes the construction and implementation of "big data" and the selection of campus football players in the form of division, analogy, induction and judgment, and explores the feasibility and implementation strategy of "big data" in the selection of campus football players.

2.2.5 Mathematical Statistics

Excel 2007 was used to input and sort out the original data obtained from the questionnaire, and spss19.0 software was used for statistical analysis.

III. THE NECESSITY OF RESEARCH ON THE SELECTION MODE OF CAMPUS FOOTBALL PLAYERS BASED ON "BIG DATA"

3.1 The Limitations of Traditional Youth Football Players Selection Mode

Whether the traditional pattern of selecting young football players can identify the future development potential of excellent young football players and excellent young football players, as well as the level of recognition. This paper makes the following statistical analysis on the questions in the questionnaire conducted by coaches about "whether the traditional youth football players' selection mode can identify excellent young football players" and "the recognition level of traditional youth football players' selection mode to excellent young football players" (see TABLE III, Fig1 and Fig 2).

TABLE III. Investigation on whether traditional youth football players can identify outstanding young football players

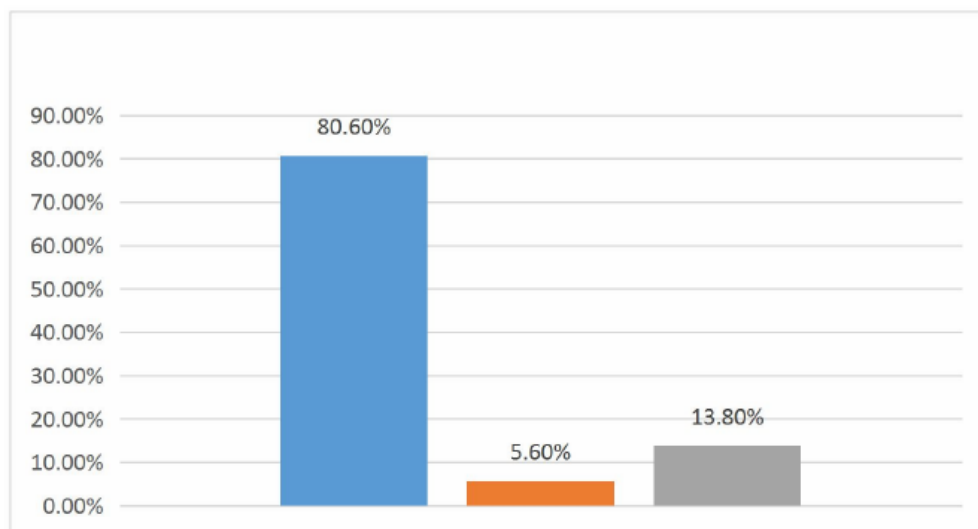| Judge	Primary and secondary school coaches	Amateur sports school coach (person)	Club coach	Proportion of this opinion
Yes	16	9	4	80.6
No	2	0	0	5.6
It's hard to say	4	1	0	13.8

Fig 1: Analysis chart of investigation results on whether the traditional youth football player selection mode can identify excellent young football players

TABLE IV. An investigation on the recognition degree of traditional youth football players' selection mode to excellent young football players

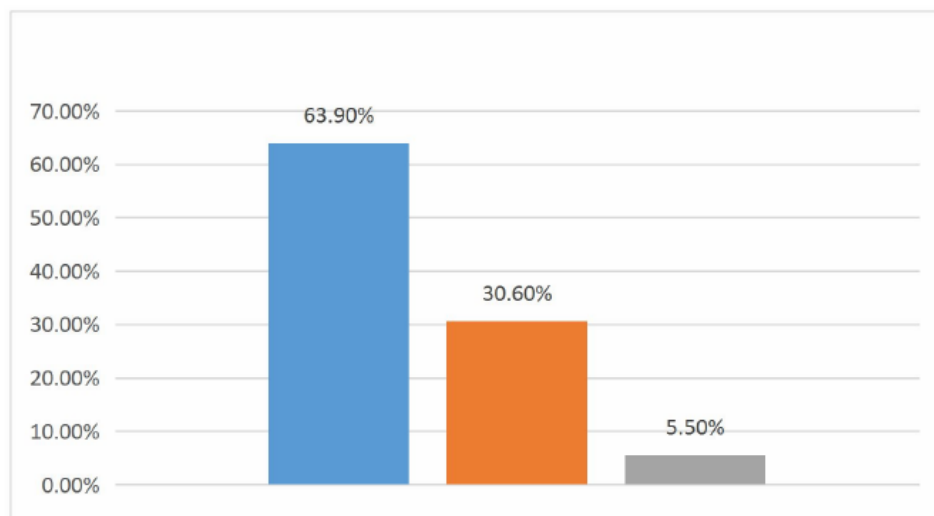| Judge	Primary and secondary school coaches	Amateur sports school coach (person)	Club coach	Proportion of this opinion
High	13	7	3	63.9
Low	7	3	1	30.6
Unrecognized	2	0	0	5.5

Fig 2: Analysis of the results of the investigation on the recognition of the traditional youth football players' selection mode to the excellent young football players

According to the analysis results, coaches generally believe that the traditional selection model of young football players can identify outstanding young football players, among which 63.9% of coaches think that the traditional selection model of young football players has a high recognition degree, 30.6% of coaches think that the traditional selection model of young football players has a low recognition degree, and 5.5% of coaches think that the traditional selection model of young football players cannot identify outstanding young football players.

3.2 Static Property of Index Data

Because the traditional selection of young football players takes adolescent football players as the object of investigation, and the physiological and human characteristics in this growth stage will change rapidly, it is required that the collection of index data must be very frequent, but the actual conditions are difficult to meet the real-time collection of index data, which leads to the reference value of the existing index system always subject to timeliness [8]. Taking the height index as an example, if the height change is made into a height growth curve, the turning point of the curve is the increasing point of adolescent development. This information can be used to obtain individual maturity.However, the actual situation is that most of the players are in

the school stage during their adolescence. When they enter or transfer to other schools, it is difficult to record the height data continuously, so it is difficult to establish a complete height growth curve, and it is lack of timeliness to reflect the individual's maturity.

3.3 Shortsightedness of Measurement Data

The index data obtained by anthropometry can directly reflect the state level of young football players at a certain time point. This makes coaches and scouts who pursue short-term results tend to use anthropometric data as the main basis for judging the potential success of young football players. As a result, the shortsighted selection resulted in the selection of early maturing and the elimination of late maturing. For example, the 30 meter sprint is one of the best test systems for selecting outstanding young men's football players.Some studies have shown that in U-14 football players, the weight of the players is positively correlated with the speed of shooting, and negatively correlated with the 30 m sprint time. However, there was no significant difference between U-16 and U-17 soccer players. The performance relationship between anthropometric data of specific age stage and exercise ability is not significantly reflected in the growth stagnation period. Therefore, ignoring the characteristics of long-term changes and adopting the short-term measurement rules will lead to premature misjudgment of young football players.

3.4 The Uncertainty of Action Mechanism

Research shows that physiology, psychology and intelligence are affected by both innate and acquired factors. Congenital factors are genetic factors, which are difficult to change and belong to "constant". The postnatal factors are "variable" because of the individual differences of young football players and the different growth environment. Through learning and training, we can shape the comprehensive quality of young football players and make up for the deficiency of congenital factors.The players who originally had no obvious congenital advantage will be inspired after scientific and systematic training, and may reach unexpected performance level. According to the research of foreign scholars, the potential of football players under U-16 is determined by more complex comprehensive factors. However, at present, it is difficult to consider this complex comprehensive factor in the actual selection of materials. This is mainly affected by the development level of measurement technology, data statistics technology and some social conditions.

IV. CONCLUSION

1. Through the investigation and analysis of the traditional youth football player selection mode, it is found that although the traditional youth football player selection can identify the excellent young football player, but for the future development potential of the excellent young football player is lack of recognition. The main reason lies in the static and one sidedness of the index data.

2. In view of the low success rate of traditional youth football players and the support of "big data" for dynamic selection. Under the cultivation mode of campus football, it is necessary

to study the selection mode of campus football players based on "big data", and establish the "data assets" of campus football.

3. With the development of campus football and the continuous development of "big data" technology, it has a practical basis to carry out the research on the selection mode of campus football players based on "big data". In China, the policy preference and economic support for football cause are more and more powerful, the awareness of privacy protection is constantly enhanced, and the legal system of information security is constantly improved. Therefore, it is feasible to study the selection mode of campus football players based on "big data".

4. The construction and analysis of the guiding ideology, content system, structure system, method system and implementation strategy of campus football players selection mode based on "big data" provides certain theoretical and methodological support for the selection and cultivation of campus football players under the background of big data. However, the construction of campus football players selection mode based on "big data" still needs further discussion and demonstration.

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