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Research on the Talent Selection Model for Grassroots Volleyball Players

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Abstract: Talent selection is the beginning of competitive sports, and the primary talent selection stage is of utmost importance in the talent selection process. In view of the current situation and problems in grassroots volleyball talent selection, this study summarizes the coaches' talent selection experiences and methods in the practice of grassroots volleyball talent selection, aiming to establish a talent selection model for grassroots volleyball players and provide references for grassroots volleyball talent selection. This study uses the methods of literature review, interviews, the Delphi method, questionnaire survey, mathematical statistics, and logical analysis. After constructing the index system of talent selection methods for grassroots volleyball players, a talent selection model for grassroots volleyball players is established through factor analysis, and each part of the model is analyzed in detail. The conclusions are as follows. (1) The talent selection model for grassroots volleyball players includes 1 first-level index, 5 second-level indexes, and 20 third-level indexes. (2) The basic sports quality factor is the most important part of this talent selection model. The sensitivity and coordination quality test is the part that coaches attach the most importance to, and the others mainly focus on reaction speed, ball sense, and explosive power. (3) The body type prediction factor and the thinking ability factor have similar importance levels in this model, mainly reflected in the prediction of athletes' future height and body type and the judgment of "intelligence." (4) The personality and psychological factor and the spatial sense factor are the main components of the abilities that volleyball players should possess, making this talent selection model more complete.

Keywords: Talent selection for volleyball players; Primary talent selection; Talent selection methods; Talent selection model

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1. Introduction

In the current grassroots talent selection work, the scientific talent selection theory is difficult to implement effectively due to limitations such as insufficient equipment and funds. Coaches still mainly rely on experience-based talent selection, choosing potential young players based on their long-accumulated experience. This is also the norm in the talent selection of grassroots volleyball players. At present, the scientific talent selection theory

has developed relatively maturely, but it is difficult to be practical in grassroots talent selection due to restrictions on equipment and other reasons, resulting in a disconnection between the scientific talent selection theory and practice [1].

In the field of sports talent selection theory research, researchers mainly use scientific methods that can be specifically quantified and standardized for research. This approach has promoted human understanding and transformation of nature and social progress. However, human beings have both natural characteristics brought by their physical bodies and social characteristics brought by complex emotions. Therefore, the research on humans and athletes is a complex, systematic study. Relying solely on scientific methods has certain limitations. Thus, in the practice of talent selection, how to choose between scientific talent selection and experience-based talent selection is a question worthy of study. Currently, many studies on the primary talent selection stage one-sidedly pursue scientific talent selection methods and arbitrarily oppose experience-based talent selection to scientific talent selection, believing that experience-based talent selection is unscientific. Such a view is difficult to promote the development of talent selection research [2–3].

1.1. Research objectives

The purpose of this study is to summarize the coaches' talent selection experiences and methods in the practice of grassroots volleyball talent selection, and establish a talent selection model for grassroots volleyball players to provide references for grassroots volleyball talent selection [4].

1.2. Research significance

By summarizing the talent selection experiences of grassroots volleyball coaches and establishing a talent selection model for grassroots volleyball players, it can help coaches better discover and cultivate potential volleyball reserve talents, minimize the waste of human and material resources, and promote the efficient development of the cultivation of volleyball reserve talents [5].

2. Literature review

From the literature review, it can be seen that there are many studies on scientific talent selection theories, but few can be organically combined with practice. Especially in the field of volleyball, most studies hold the view that grassroots talent selection lacks scientific theoretical guidance and is relatively backward. Moreover, the research on relevant talent selection index systems still starts from a theoretical perspective and is difficult to truly implement in practice. Therefore, this study attempts to start from the practice of grassroots volleyball talent selection, deeply explore the valuable experiences of grassroots volleyball coaches in talent selection, combine the practical experience of talent selection with scientific talent selection theories, and construct an index system for grassroots volleyball talent selection that is in line with the practice of grassroots volleyball talent selection, has both theoretical guidance and practical feasibility, and can truly provide reference value for actual talent selection work [6–7].

3. Research design

3.1. Research objects

This study takes the talent selection methods for grassroots volleyball players as the research object.

3.2. Research methods

3.2.1. Literature review method

According to the research objectives and content of this paper, 10 relevant books in the library were consulted. Journal websites such as the Beijing Sport University Library, CNKI, and EBSCO series databases were used. By searching for keywords such as "scientific talent selection for athletes", "talent selection for young athletes", and "talent selection for volleyball players", 112 relevant articles were retrieved, providing an important theoretical basis for this research [8].

3.2.2. Interview method

In this study, interviews were conducted with coaches of grassroots volleyball teams to obtain the index of talent selection methods required for the research. The author mainly conducted telephone interviews with relevant coaches. The interview content mainly focused on exploring the talent selection experiences accumulated by coaches in years of grassroots talent selection practice and the experience-based talent selection methods they considered important. The interview content was recorded, summarized, and analyzed to form the required indexes for this study. At the same time, the specific explanations of each index in the research results will also refer to the coaches' interview content [9].

3.2.3. Delphi method

The talent selection index system obtained from the analysis of the interview content with grassroots coaches was screened through the Delphi method in the form of a questionnaire, with a total of 2 rounds of screening. In the first round, the indexes were screened as "suitable" or "unsuitable", and those with a suitability rate of over 80% were retained. In the second round, the indexes were screened by Likert scale scoring. The indexes with an average score greater than 4.0 and a coefficient of variation less than 0.25 were retained. The average score ensured the importance of the indexes, and the coefficient of variation ensured the consistency of experts' opinions. Finally, all the indexes required for the research were determined, and a questionnaire was formed [10].

3.2.4. Questionnaire survey method

According to the research objectives and requirements, the index system of talent selection methods for grassroots volleyball players retained after the Delphi method screening was formed into a questionnaire named "Evaluation of Indexes of Experience-Based Talent Selection Methods for Grassroots Volleyball Players" in the form of a Likert scale. The results of the questionnaire were used for subsequent factor analysis.

3.2.5. Mathematical statistics method

The survey results of the questionnaire were sorted out and entered into SPSS 26.0 software for data analysis. The factor analysis method was mainly used to analyze each index, so as to construct the talent selection model for grassroots volleyball players.

3.2.6. Logical analysis method

Logical methods such as induction and deduction, analysis, and synthesis were used to analyze each factor in the talent selection model for grassroots volleyball players and the method indexes it contains.

3.3. Research focus, difficulties, and innovations

3.3.1. Research focus

The focus of this study is to investigate the experience-based talent selection methods for grassroots volleyball players and summarize them to form a talent selection model for grassroots volleyball players.

3.3.2. Research difficulties

The difficulty of this study is to collect the experience-based talent selection methods for grassroots volleyball players through the interview method.

3.3.3. Research innovations

This study is based on the practice of grassroots volleyball talent selection, collecting and investigating the coaches' experience-based talent selection methods. The formed model has high feasibility in the talent selection practice and can directly provide effective references for grassroots volleyball talent selection.

4. Construction of the talent selection model for grassroots volleyball players

4.1. Determination of the main factors of the talent selection model for grassroots volleyball players

After screening the indexes collected through interviews by expert questionnaires and coach questionnaires, a total of 29 talent selection method index factors were finally included in the research scope.

After determining the method indexes, the KMO test and Bartlett's test of sphericity were used to determine the internal correlation of the sample data, so as to judge whether the sample data was suitable for factor analysis. When conducting factor analysis, it is generally considered that when the KMO test coefficient > 0.5 and the significance probability of Bartlett's test of sphericity < 0.05, the questionnaire has a certain structural validity and is suitable for factor analysis. The test results of the sample data of this study show that the KMO value is 0.740, indicating a strong partial correlation among variables. The significance probability *P* value of Bartlett's test of sphericity is 0.000 < 0.01, indicating that the hypothesis of independent variables is rejected, and it is suitable for factor analysis.

The eigenvalues of the factor analysis obtained from the sample data show that the eigenvalues of the first 5 factors are greater than 1, and their cumulative variance contribution rate reaches 72.776%. The eigenvalues of the other subsequent factors are less than 1, so it is of little significance to extract them. The first 5 factors can basically reflect the information of the overall variables. Therefore, 5 factors were finally determined.

During the calculation process, according to the correlation degree of each factor under each common factor and the factor load, invalid factors were repeatedly deleted, and deleted factors were added to play a role in dimension reduction and achieve the optimal model. Finally, 20 factors were retained, and 9 factors were deleted. Subsequently, the initial factor matrix was calculated, and the orthogonal rotation was carried out by the varimax method. Finally, 5 common factors were extracted.

The first factor includes seven factors: half-meter-character movement, 36-meter movement, 505 agility test, imitation dig, 30-meter sprint, catching the hexagonal ball rebound, and standing long jump. Since these seven factors are all related to basic sports quality tests, it is named the basic sports quality factor.

The second factor includes five factors: lower limb length, Achilles tendon length, predicted height, upper limb length, and parents' height. Since these five factors are all related to future body type prediction, it is named

the body type prediction factor.

The third factor includes four factors: inquiry after information transfer, simple information transfer, simple action learning, and complex question inquiry. Since these four factors are all related to thinking ability, it is named the thinking ability factor.

The fourth factor includes two factors: simple question inquiry and the neuro-temperament type scale test. Since these two factors are all related to personality and psychological assessment, it is named the personality and psychological factor.

The fifth factor includes two factors: catching a water bottle above the head and catching an irregularly thrown ball. Since these two factors are all related to spatial sense tests, it is named the spatial sense factor.

4.3. Summary

The talent selection model for grassroots volleyball players includes five parts: the basic sports quality factor, the body type prediction factor, the thinking ability factor, the personality and psychological factor, and the spatial sense factor. Each part represents an important characteristic that volleyball players should possess. In the actual talent selection work, coaches should flexibly use this talent selection model according to the needs of the talent selection work and the personal characteristics of the candidates. By giving appropriate emphasis to each aspect and conducting comprehensive considerations, a satisfactory talent selection effect can be achieved.

5. Research conclusions and suggestions

5.1. Research conclusions

The talent selection model for grassroots volleyball players includes 1 first-level index, 5 second-level indexes, and 20 third-level indexes.

The basic sports quality factor is the most important part of this talent selection model. The sensitivity and coordination quality test is the part that coaches attach the most importance to, and the others mainly focus on reaction speed, ball sense, and explosive power.

The body type prediction factor and the thinking ability factor have similar importance levels in this model, mainly reflected in the prediction of athletes' future height and body type and the judgment of "intelligence."

The personality and psychological factor and the spatial sense factor are the main components of the abilities that volleyball players should possess, making this talent selection model more complete.

5.2. Research suggestions

It is recommended that grassroots volleyball coaches refer to the talent selection model for grassroots volleyball players to improve the talent selection system of their own teams.

In this study, only the specific content of each index in the talent selection model for grassroots volleyball players was analyzed. Follow-up research can put it into the talent selection practice to obtain actual data and test its effectiveness according to the actual talent selection results.

Disclosure statement

The author declares no conflict of interest.

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