

Empirical Analysis of Factors Promoting the Participation of Young People in Extracurricular Sports Activities in Guangdong Province and Research on the Influencing Mechanism

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Abstract: In order to explore the promoting factors and influencing mechanisms of youth participation in extracurricular sports activities in Guangdong Province, improve the participation rate of youth in extracurricular sports, and assist in the improvement of youth physical health, this article adopts research methods such as literature review, questionnaire survey, interview, and empirical analysis. The study focuses on 12-18 year old youth in Guangdong Province and conducts empirical investigation and analysis. The results show that there are regional, age, and gender differences in the participation rate of extracurricular sports activities among young people in Guangdong Province. Sports interest, parental support, school guidance, and venue supply are the core promoting factors; The various promoting factors work together through four dimensions: individual, family, school, and society, forming an impact mechanism of "individual willingness driven - family support and guarantee - school guidance and linkage - social environment support". Based on this, targeted suggestions are proposed from multiple dimensions to provide empirical support and practical guidance for the promotion and optimization of extracurricular sports activities for young people in Guangdong Province.

Keywords: Guangdong Province; teenagers; off campus sports activities; facilitating factors; influence mechanism

1. Introduction

As the future builders and successors of the country, the physical health level of young people is directly related to the improvement of national quality and the long-term development of the country. The "Healthy China 2030" Plan Outline clearly states that it is necessary to strengthen physical exercise for young people, improve their physical health level, and promote the normalization and standardization of extracurricular sports activities for young people. Extracurricular sports activities, as an important extension and supplement of school sports, are the core carrier for young people to participate in physical exercise, cultivate exercise habits, and enhance sports abilities. They have irreplaceable significance in enriching the extracurricular life of young people and promoting their physical and mental health and coordinated development. As a province with a large economy and population in China, Guangdong Province has a large population of young people and a certain foundation for extracurricular sports activities. However, due to multiple factors such as uneven regional development, differences in family importance, and insufficient activity supply, there are still many practical difficulties in the participation of young people in extracurricular sports activities in Guangdong Province. The main manifestations are low participation rates, single forms of participation, insufficient sustainability, significant urban-rural participation gap, lack of activity resources in rural areas, lack of initiative and effective guidance and guarantee for young people's participation. Such problems not only hinder the improvement of young people's physical health, but also hinder the high-quality development of extracurricular sports in Guangdong Province. Therefore, systematically exploring the factors that promote participation, analyzing the influencing mechanism, and proposing optimization strategies have become important academic and practical issues that urgently need to be solved.

At present, domestic and foreign research mostly focuses on the analysis of a single factor in the participation of young people in extracurricular sports, or is limited to case studies in specific regions and groups[1]. There is a lack of systematic empirical research on the factors that promote the

participation of young people in extracurricular sports in Guangdong Province, and the depth of analysis of the influencing mechanism is insufficient. This study focuses on adolescents in Guangdong Province and constructs a multidimensional promotion factor system. Through empirical analysis, the degree of influence of each factor is clarified, and its mechanism of action is deeply analyzed. This can enrich the empirical results of research on adolescents' extracurricular sports participation, improve the theoretical system of promotion factors for sports participation, and provide theoretical references and research paradigms for subsequent related research. At the same time, this study clarifies the current situation and core promoting factors of extracurricular sports participation among young people in Guangdong Province through empirical investigation, analyzes the influencing mechanism, and provides empirical support for relevant departments such as education and sports in Guangdong Province to formulate promotion policies and optimize activity supply. It also provides targeted guidance for extracurricular sports institutions, schools, and families, promotes school community cooperation and family collaboration, optimizes the extracurricular sports activity environment, thereby improving the participation rate of young people in extracurricular sports, cultivating good exercise habits, and helping to improve the physical health of young people.

2. Related concepts and theoretical foundations

2.1 Definition of related concepts

The adolescents in this study are defined as middle and high school students aged 12-18, in accordance with relevant policies and research practices in China [2]. Adolescents in this age group are at a critical stage of physical and mental development, with a growing awareness of sports and exercise habits. They have relatively sufficient free time outside of school and are the main participants in extracurricular sports activities. Their participation behavior is influenced by various factors such as individuals, families, schools, and society, and has strong research representativeness.

Off campus sports activities refer to the physical exercise activities carried out by young people outside of school in their spare time, holidays, and other venues, in addition to school physical education teaching and training [3]. They do not include school organized off campus sports competitions, training sessions, and other activities. Its types mainly include ball sports, track and field sports, martial arts, dance, roller skating, etc. The forms of participation can be divided into autonomous participation, family participation, and participation organized by extracurricular sports institutions, with characteristics such as autonomy, diversity, and flexibility.

The participation in sports activities in this study mainly refers to the participation behavior of teenagers in extracurricular sports activities, which is manifested in the frequency, duration, and type of participation in extracurricular sports activities. It is a comprehensive reflection of teenagers' sports awareness, interest, and ability. The frequency of participation is measured by the number of times per week, the duration of participation is measured by the time spent each time, and the type of participation is based on the actual extracurricular sports activities that teenagers participate in.

2.2 Theoretical basis

The theoretical support of this study mainly includes the theory of planned behavior, social ecology theory, and motivation theory. The Theory of Planned Behavior was proposed by Ajzen in 1985, which states that individual behavioral intention is a direct factor influencing behavior, and behavioral intention is influenced by three major factors: attitude, subjective norms, and perceived behavioral control. Attitude refers to an individual's evaluation of behavior, subjective norms refer to the social expectation pressure that an individual feels, and perceived behavioral control refers to an individual's judgment of their own behavioral abilities and resources. This theory provides support for analyzing the influence path of adolescent extracurricular sports participation behavior and various promoting factors, such as sports interest affecting participation attitude, and parental support affecting subjective norms. The social ecology theory was proposed by Bronfenbrenner, who believes that individual development is the result of the interaction between individuals and the environment. The environment is divided into four interrelated levels: micro, meso, outer, and macro [4]. Based on this, this study divides the factors promoting adolescent extracurricular sports participation into four dimensions: individual (micro), family and school (meso), and society (outer and macro), providing a theoretical basis for analyzing the synergistic mechanism of various factors and avoiding the limitations of single dimensional analysis. The motivation theory focuses on the stimulation and promotion of individual behavioral motivation,

covering the hierarchy of needs theory, reinforcement theory, etc [5]. The hierarchy of needs theory emphasizes the hierarchical nature of individual needs, while the reinforcement theory focuses on the positive reinforcement effect on behavior. This theory provides a basis for analyzing the mechanism of promoting factors and can explain the motivational effects of sports interest, parental praise, policy support, and other factors on adolescent participation in extracurricular sports. The three major theories complement each other and together form the theoretical framework of this study, providing scientific guidance for research.

3. Empirical analysis of factors promoting the participation of young people in extracurricular sports activities in Guangdong Province

3.1 Survey design and data collection

Based on the purpose and core content of this study, and with reference to relevant literature and existing questionnaires, design a survey questionnaire on the participation and promotion factors of youth in extracurricular sports activities in Guangdong Province. This questionnaire consists of four parts: the first part is basic information, covering gender, age, educational level, location, household income level, etc; The second part is about the current situation of participation in extracurricular sports activities, involving participation frequency, duration, types, etc; The third part is a survey of promoting factors, including 28 items in the four dimensions of individual, family, school, and society. The Likert 5-point scale (1=completely disagree, 5=completely agree) is used for scoring; The fourth part is an open-ended question, investigating the difficulties and suggestions for young people to participate in extracurricular sports activities. To ensure the scientificity and reliability of the questionnaire, 200 adolescents were selected for a pre survey, and 192 valid questionnaires were collected (with an effective response rate of 96%). After SPSS 26.0 software testing, the Cronbach's alpha coefficient of the questionnaire was 0.876 (>0.8), the KMO value was 0.823, and the Bartlett sphericity test was $P<0.001$, indicating good reliability and validity. Based on this, the questionnaire was revised to form a formal questionnaire. The formal survey adopts a combination of online and offline methods, selecting teenagers from six different regions in Guangdong Province as the subjects, covering four major regions and different urban and rural areas, educational stages, and household income groups. A total of 2000 questionnaires were distributed, and 1862 valid questionnaires were collected (effective response rate of 93.1%). The sample distribution is reasonable and representative, which can reflect the overall situation of extracurricular sports participation among teenagers in Guangdong Province.

3.2 Descriptive statistical analysis

This study uses descriptive statistical analysis to clarify the overall status and various dimensions of promoting factors in the participation of young people in extracurricular sports activities in Guangdong Province. In terms of participation status, in terms of frequency, 38.8% (723 people) participate once or less per week, 48.1% (896 people) participate 2-3 times, and only 13.1% (243 people) participate 4 times or more, indicating that most teenagers have low participation frequency and insufficient sustainability; In terms of duration, 24.3% (452 people) participated for less than 30 minutes each time, 55.2% (1028 people) participated for 30-60 minutes, and 20.5% (382 people) participated for more than 60 minutes. The overall duration of participation was relatively short and did not meet the effective exercise standards. In terms of types, 67.6% (1258 people) participate in ball sports, 31.5% (587 people) participate in track and field sports, and 22.7% (423 people) participate in other sports, with a focus on ball sports; Formally, independent participation (53.0%, 987 people) and peer participation (41.1%, 765 people) are the main forms, and the guiding role of extracurricular sports institutions is insufficient. In terms of promoting factors, the average scores of individual, family, school, and social dimensions are all above 3.0 (out of 5 points), indicating a promoting effect; The average scores of individual dimension sports interest (3.68 ± 0.87), sports ability (3.52 ± 0.91), and family dimension parental support (3.62 ± 0.89) and family sports atmosphere (3.45 ± 0.93) are relatively high, while the average scores of school and social dimension related factors are relatively low, and there is still room for improvement, as is shown in Table 1.

Table 1. Descriptive statistics of factors promoting the participation of young people in extracurricular sports activities in Guangdong Province (n=1862)

Dimension	Specific factors	Average score	Standard deviation
Individual dimension	Sports interest	3.68	0.87
	Sports ability	3.52	0.91
Family dimension	Parental support	3.62	0.89
	Family sports atmosphere	3.45	0.93
School dimension	Guidance on sports	3.38	0.95
	External sports linkage	3.21	0.98
Social dimension	Venue supply	3.25	1.02
	Policy support	3.31	0.97

3.3 Differential analysis

This study takes gender, age, region, and household income level as independent variables, and the frequency of adolescent participation in extracurricular sports activities as the dependent variable. Independent sample t-test and one-way ANOVA methods are used to systematically explore the differences in extracurricular sports participation among different groups of adolescents. In terms of gender differences, the independent sample t-test results showed that the frequency of male students participating in extracurricular sports activities (3.21 ± 1.05) was significantly higher than that of female students (2.87 ± 1.02) ($t=6.892$, $P<0.001$), which is closely related to male students having a stronger interest in sports and stronger athletic abilities. In terms of age differences, one-way analysis of variance showed that there were significant differences in the participation frequency of adolescents in different age groups ($F=8.763$, $P<0.001$). After multiple comparisons, the participation frequency of adolescents aged 12-14 (3.35 ± 1.03) was significantly higher than that of adolescents aged 15-16 (3.02 ± 1.06) and 17-18 (2.78 ± 1.01). The core reason is that as age increases, academic pressure increases and extracurricular time decreases, which in turn reduces the frequency of extracurricular sports participation. In terms of regional differences, one-way ANOVA showed significant differences in participation frequency among different regions ($F=10.235$, $P<0.001$). The participation frequency of adolescents in the Pearl River Delta region (3.32 ± 1.04) was significantly higher than that in the eastern, western, and northern Guangdong regions, reflecting the important influence of regional economic development level on the supply and participation conditions of extracurricular sports resources. In terms of household income differences, one-way analysis of variance showed that there was a significant difference in the participation frequency of adolescents from families with different income levels ($F=7.542$, $P<0.001$). The participation frequency of adolescents with a monthly household income of over 10000 yuan (3.38 ± 1.02) was significantly higher than that of low - and middle-income groups, indicating that family income level determines material support ability, which in turn affects adolescents' participation in extracurricular sports.

3.4 Correlation analysis

Using Pearson correlation analysis method, the correlation between various promoting factors and the frequency of adolescent participation in extracurricular sports activities was examined. The results are shown in Table 2. According to Table 2, there is a significant positive correlation ($P<0.01$) between individual level sports interest and ability, family level parental support and sports atmosphere, school level physical education guidance and extracurricular sports linkage, and social level venue supply and policy support with the frequency of adolescent participation in extracurricular sports activities, with correlation coefficients ranging from 0.326 to 0.587. Among them, the correlation coefficient between sports interest ($r=0.587$) and parental support ($r=0.523$) is the highest, indicating that these two factors are most closely related to adolescent participation in extracurricular sports; Next are athletic ability ($r=0.498$) and family sports atmosphere ($r=0.476$), while the correlation coefficients of extracurricular sports linkage ($r=0.326$) and venue supply ($r=0.342$) are relatively low, but still show a significant positive correlation.

The correlation analysis results indicate that all promoting factors have a positive impact on the participation of adolescents in extracurricular sports activities, laying the foundation for subsequent regression analysis and the construction of influencing mechanisms, as is shown in Table 2.

Table 2. Correlation analysis between promoting factors and the frequency of adolescent participation in extracurricular sports activities (n=1862)

Facilitating factors	Correlation coefficient r	P value
Sports interest	0.587	<0.001
Sports ability	0.498	<0.001
Parental support	0.523	<0.001
Family sports atmosphere	0.476	<0.001
Guidance on sports	0.389	<0.001
External sports linkage	0.326	<0.001
Venue supply	0.342	<0.001
Policy support	0.367	<0.001

3.5 Regression analysis

This study takes the frequency of adolescent participation in extracurricular sports activities as the dependent variable (Y), and sets the 8 promoting factors selected through correlation analysis as independent variables. Stepwise regression analysis is used to conduct multiple linear regression analysis. The results showed that the regression model had a good fit ($R^2=0.452$, adjusted $R^2=0.448$, $F=102.357$, $P<0.001$) and strong explanatory power. After stepwise regression screening, only five factors including sports interest, parental support, sports ability, family sports atmosphere, and sports education guidance entered the regression equation ($P<0.05$), while the other three factors were excluded due to insufficient significance. The regression equation is $Y=0.321X_1+0.258X_3+0.187X_2+0.156X_4+0.102X_5+0.873$. The regression coefficients indicate that all five core factors have a positive impact, and the degree of impact, in descending order, is sports interest, parental support, sports ability, family sports atmosphere, and sports education guidance, as is shown in Table 3.

Table 3. Results of multiple linear regression analysis

Independent variable	Regression coefficient	Standard error	T-value	P-value
Constant term	0.873	0.125	6.984	<0.001
Sports interest (X1)	0.321	0.032	10.031	<0.001
Parental support (X3)	0.258	0.035	7.371	<0.001
Sports ability (X2)	0.187	0.038	4.921	<0.001
Family sports atmosphere(X4)	0.156	0.041	3.805	<0.001
Guidance on sports(X5)	0.102	0.043	2.372	0.018

4. The influencing mechanism of factors promoting the participation of young people in extracurricular sports activities in Guangdong Province

4.1 Dimension division and functional logic of promoting factors

Based on empirical analysis results and combined with social ecology theory and planned behavior theory, the core promoting factors for the participation of young people in extracurricular sports activities in Guangdong Province are divided into three dimensions: individual, family, and school (extracurricular sports linkage, venue supply, and policy support have not entered the regression process, indicating that their direct impact on youth extracurricular sports participation is relatively small, mainly through indirect effects). The internal factors of each dimension are interrelated and interact with each other, forming an overall logic of "individual willingness driven - family support guarantee - school guidance linkage".

The individual dimension is the core driving layer, and sports interest and ability, as the core factors of individuals themselves, directly affect the willingness and behavior of young people to participate, and are the internal driving force for their participation in extracurricular sports; The family dimension is an important guarantee layer, and parental support and family sports atmosphere provide material, emotional, and environmental support for young people's participation in extracurricular sports, reducing barriers to participation and strengthening their willingness to participate; The school dimension is the guiding linkage layer. Physical education provides guidance on sports knowledge and skills for young people, cultivates exercise habits, promotes the linkage between schools and extracurricular sports resources, and builds a platform for young people to participate. The three dimensions do not exist in

isolation, but cooperate and influence each other to jointly promote the participation of young people in extracurricular sports activities.

4.2 Analysis of the impact mechanism of promoting factors in various dimensions

The three-dimensional promotion factors of individuals, families, and schools have differentiated effects on the participation of adolescents in extracurricular sports from the perspectives of internal driving, external protection, and guiding support. The influencing mechanism revolves around the correlation between participation willingness and participation behavior, and is supported by empirical data. In the individual dimension, sports interest and sports ability are the core intrinsic driving forces, which promote participation behavior by acting on participation willingness. Among them, sports interest is the primary driving force, with the highest regression coefficient (0.321), highlighting the dominant influence. This is highly consistent with the theory of planned behavior that "attitude affects behavioral intention", and can encourage adolescents to actively pay attention to activity information, independently use their spare time to participate, and maintain sustainability; Sports ability serves as the basic support, with a regression coefficient of 0.187. Good sports ability can enhance a sense of achievement and interest in sports, while the opposite can easily lead to setbacks and decreased willingness to participate.

The support of parents in the family dimension and the family sports atmosphere constitute important external guarantees, reducing participation barriers through material, emotional, and environmental support. Parental support, as the core dimension of the family, has a regression coefficient of 0.258, covering three aspects: material supply, time companionship, and emotional encouragement; The family sports atmosphere can subtly influence the sports awareness and habits of teenagers, with a regression coefficient of 0.156. A positive atmosphere can drive teenagers to actively participate, while a negative atmosphere reduces opportunities for participation. The guidance of physical education in the school dimension plays a key guiding role, with a regression coefficient of 0.102. Through classroom teaching, sports knowledge and skills are imparted, and extracurricular activities stimulate sports enthusiasm, laying the foundation for extracurricular sports participation; Although the impact is relatively small, it can help young people establish correct sports concepts and cultivate exercise habits. In addition, although the linkage between schools and extracurricular sports institutions has not entered the regression equation, it can indirectly provide participation platforms and opportunities, and assist in promoting participation behavior.

4.3 Synergistic mechanism of promoting factors

The factors that promote the participation of young people in extracurricular sports activities from the dimensions of individual, family, and school are not isolated, but are interrelated and work together to form an organic whole that promotes the participation of young people in extracurricular sports activities. The synergistic effect is mainly reflected in the two core levels of mutual reinforcement and complementarity. In terms of mutual reinforcement, individual sports interests and abilities as internal driving forces can significantly enhance adolescents' willingness to participate in extracurricular sports, thereby promoting increased support at the family level and strengthened guidance measures at the school level; The linkage between family support and school guidance can further enhance the exercise ability and interest of young people, forming a positive cycle of "individual willingness improvement - family support strengthening - school guidance strengthening - individual willingness further improvement". In terms of mutual complementarity, various dimensional factors can effectively compensate for the shortcomings of a single factor and build a comprehensive promotion system: teenagers with strong interest in sports but insufficient sports ability can be guided to improve their sports skills through school physical education; Adolescents with strong physical abilities but lacking family support can overcome participation barriers by leveraging material and time support at the family level; Teenagers who have the willingness to participate and family support but lack skill guidance can ensure orderly implementation of participation behavior through school guidance, and the three work together to form a closed loop, maximizing the promotion effect.

4.4 Verification and correction of impact mechanisms

To verify the rationality of the constructed model on the influencing factors of adolescent participation in extracurricular sports activities, this study used AMOS 24.0 software to construct a structural equation model, with individual dimensions (sports interest, sports ability), family dimensions (parental support, family sports atmosphere), and school dimensions (sports education guidance) as latent

variables, and adolescent participation frequency in extracurricular sports activities as the dependent variable, to conduct model fitting and validation. The model fitting results showed that all fitting indicators met the ideal standards ($\chi^2/df=2.357$, RMSEA=0.038, GFI=0.925, AGFI=0.902, NFI=0.918, CFI=0.946), indicating that the model had a good fit and could effectively explain the impact of various promoting factors on the participation of adolescents in extracurricular sports activities. The model validation results showed that the direct effects of individual, family, and school dimensions on adolescent extracurricular sports participation were 0.423, 0.315, and 0.187, respectively, which were consistent with the previous regression analysis results and further supported the rationality of the influencing mechanism. Based on the results of model validation and qualitative interview data, this study slightly revised the impact mechanism model and supplemented the indirect effects of social dimensions (venue supply, policy support, and extracurricular sports linkage). Although these factors do not have a significant direct impact on participation behavior, they can indirectly promote adolescent extracurricular sports participation by acting on family support and school guidance. The revised model is more comprehensive and scientific, and can more accurately reflect the pathways of various promoting factors.

5. Conclusion

This study conducted an empirical survey of 1862 adolescents in Guangdong Province to systematically explore the promoting factors and influencing mechanisms of their participation in extracurricular sports activities. The core conclusions are as follows: firstly, the current situation of extracurricular sports participation among adolescents in Guangdong Province is poor, with problems such as low participation frequency, short duration, concentrated types (mainly ball sports), and single forms (mainly autonomous participation and peer participation). Moreover, there are significant differences in participation in terms of gender, age, region, and family income level, with higher participation enthusiasm among boys, younger age groups, the Pearl River Delta region, and high-income adolescents. Secondly, there are a total of 5 core promoting factors that affect the participation of teenagers in extracurricular sports activities, ranked by the degree of influence as sports interest, parental support, sports ability, family sports atmosphere, and physical education guidance. All of these factors are significantly positively correlated with participation behavior and have a positive driving effect on participation behavior. Thirdly, the influencing mechanism of factors promoting participation presents the characteristics of "individual willingness driven - family support and guarantee - school guidance linkage". The three-dimensional factors of individuals, families, and schools work together to form a positive cycle, while the social dimension of venue supply, policy support, and extracurricular sports linkage indirectly assist in promoting participation.

Based on the above conclusions and combined with the actual development of extracurricular sports for young people in Guangdong Province, targeted policy recommendations are proposed from four dimensions: at the individual level, efforts should focus on cultivating students' sports interests and abilities, popularizing scientific sports concepts, and stimulating their internal motivation for participation. At the family level, guidance should be strengthened to enhance parents' sports awareness; parent-child sports activities should be encouraged, support for low-income families should be increased, and the threshold of sports participation should be lowered. At the school level, the physical education system should be improved, linkage between schools and communities should be strengthened, the guiding role of physical education teachers should be fully exerted, and diverse sports participation platforms should be established. At the social level, the supply of off-campus sports venues should be optimized with a tilt toward rural and remote areas; policy support and social participation should be enhanced, publicity and guidance should be strengthened, a positive social atmosphere should be created, and the participation rate of adolescents in off-campus sports activities in Guangdong Province should be improved.

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