Influence of Family Sports Environment on Youth Sports Behavior:

Take The Teenagers in Taiyuan City, Shanxi Province as an Example

Lei Ren and Vissarout Krabuansob

PhD, Candidate, Faculty of Management, Shinawatra University

Email: renlei880518@163.com; vissarout.k@siu.ac.th

Abstract

In recent years, China has achieved notable advancements in sports policy reform aimed at promoting adolescents' physical health and overall development. However, challenges persist in school physical education and the underdevelopment of family sports education. This study explores how family sports education affects adolescents' physical activity, focusing on its influence on long-term habits and development. It examines the role of motivation, self-efficacy, and gender differences in this relationship using literature, surveys, and statistical analysis. The findings highlight the importance of a supportive family environment and identify gender differences in the effectiveness of family sports education. Recommendations are provided for collaboration among parents, schools, and communities. Overall, the research underscores the need for an integrated approach to sports education supporting adolescents' healthy development. And Independent Variables to Dependent Variable. The family sports environment emerged as the strongest predictor, with psychological support, access to equipment, and behavioral modeling playing crucial roles. Self-efficacy positively impacted sports behavior, with adolescents overcoming barriers when confident in their abilities. Both intrinsic and extrinsic motivations influenced sports behavior, with team sports and personal achievements being enjoyable, and external rewards acting as initial motivators. The interplay between these factors highlighted the complex nature of sports behavior, with a supportive family environment fostering self-efficacy and motivation, creating a reinforcing cycle. The combined insights from quantitative data and interviews provide a foundation for designing effective strategies to enhance adolescent sports behavior.

Introduction

Attach importance to family sports, and form the cooperation mode between the country and the family in the youth sports work. In recent years, the Party and the state have always attached great importance to youth sports work. In 2018, General Secretary Xi

proposed forward the new idea of "happiness, fitness, improving personality and will" for the first time at the National Education Conference, clarifying the important role of sports in the all-round development of talent training. However, the uncoordinated development of family, Alexandr, A.,et.al.. (2016). school and community. Only by realizing the organic combination of family, school and community sports, can we truly promote the comprehensive development of youth sports work and help to realize the overall improvement of youth physical and mental health. Han, Hui, & Zheng, Jia- Kun. (2016).

Pay attention to family sports, enhance youth sports behavior, and ensure the development of their physical and mental health. According to the World Health Organization, more than 80% of adolescents worldwide do not meet the recommended level of physical activity, and physical inactivity is considered one of the major risk factors for NCD mortality. Faced with this challenge, the role of family physical education should not be underestimated. In contrast to school physical education, family physical education not only focuses on the transmission of knowledge and skills, but also emphasizes the subtle influence of children's behavior through role models in daily life. Davison, H. K., Maraist, C., & Bing, M. N. (2011).The motor behavior, values and moral qualities shown by parents profoundly affect their children's cognition and behavior habits. Lindsay, A. C.,et. al.. (2006).

Pay attention to family sports, balance the family education environment of teenagers, and break the barriers of family sports. As the early educators of children's growth, parents bear important responsibilities. Kaji, M., & Ono, Y. (2021). By participating in sports activities with their children, parents can help them develop lifelong exercise habits that are conducive to their children. The physical education concept of parents in their children's learning and leisure time directly affects the sports behavior of teenagers. Therefore, parents' attitudes towards physical education play a crucial role in the development of their children and can also influence their future healthy lifestyle.

Research Objectives

School physical education has phased characteristics, while family physical education runs through the whole growth process of children. Children's sports concerns and the

development of good exercise concepts and behaviors can continuously improve children's physical health and autonomy. The unique advantage of family sports is its ability to provide long-term and sustained support for youth sports. This educational method is not restricted by the school curriculum and can be flexibly implemented in daily family life to help children form lifelong exercise habits.

Therefore, to find the answers to the three research questions, we propose three research objectives:

1) Study the impact of family physical education on adolescent physical education behavior, and explore how family physical education can help teenagers to develop healthy exercise habits, so as to have a positive impact on their overall health and development.

2) To study the intermediary role of sports motivation and self-efficacy in family physical education, and to explore how to enhance the physical motivation and self-efficacy of teenagers to further improve the level of family physical education and promote teenagers to participate in physical activities more actively.

3) Analyze the regulatory effect of gender differences on the influence of family physical education on adolescent physical education behavior, explore the gender-based differences in adolescent family physical education performance, and develop more targeted and effective family physical education strategies based on gender characteristics.

Literature Review and concepts

1. Definition of basic concepts

The concept of family environment is mainly defined by foreign experts, and it is not a single concept, but contains multiple levels. Chinese scholar Guan (2014) believes that " family environment is the content environment of family life with the background of family members, and it is the spiritual embodiment of family life style, education and children's values."Ma (2010) divided the family environment into two variables: subjective and objective. To sum up, Chinese scholars summarize the family environment into two aspects: material (objective) environment and spiritual (subjective) environment. Combined with the

concept of family physical education, the influencing factors of family physical education are divided into three categories: physical environment, psychological environment and behavioral environment.as shown in the figure:

2. Related theories

Theory of social learning

The basic assumption of social learning theory is that human behavior is acquired in interactions with others and the social environment. This theory includes three basic contents: observation learning theory, ternary interaction theory and self-efficacy theory, Guo- Long., M. (2019). which mainly discusses the influence of personal cognition, behavior and environmental factors and the interaction of the three on human behavior.

Theory of family systems

Family system theory, based on family psychology, studies the thinking, emotional and behavioral characteristics of interconnected family individuals. Family system theory guide family function of youth sports behavior of positive method, by improving the service object of family relations, build a harmonious and healthy family system, make the family function to the maximum.

Theory of planned behavior

Theory of Planned Behavior (TPB) is mainly used to predict and explain the behavior of individual specific environment. The theory of planned behavior has good explanatory and predictive power for children to develop physical activity, and the theory also provides effective theoretical guidance for the intervention of individual physical activity.

Model for physical activity promotion in adolescents

The YPAP model (young adolescent physical activity promotion model) is a "young adolescent physical activity promotion model" formed specifically for children and adolescents on the basis of the ecological model.
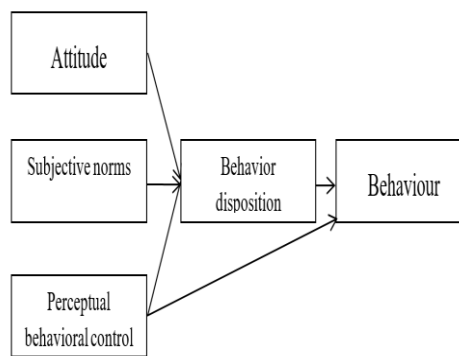
Relationship between family sports environment, self-efficacy and exercise behavior

Self-efficacy does play a crucial mediating role in people's acquisition of new skills, knowledge, experience, and subsequent behavioral performance. It is not only an individual assessment of beliefs about their own abilities, but also a key factor driving individuals to take action, face challenges and sustain efforts. The study explores the role of multiple factors at the individual, interpersonal, and community level and reveals the complex relationships between them.

**Relationship between family sports environment, gender and exercise behavior**

The relationship between the family sports environment, gender, and exercise behavior has been a topic of significant research in various fields, including psychology, sociology, and physical education. Studies suggest that the family plays a crucial role in shaping children's attitudes toward physical activity, and the family sports environment-comprising aspects like access to sports equipment, opportunities for physical activity, parental encouragement, and role modeling—can significantly impact children's participation in exercise.

Conceptual Framework

This paper aims to study the influence of family sports environment on adolescent physical behavior, and the core element is the analysis of how parents' physical environment, behavioral environment, psychological environment intervene to support adolescent physical behavior and other related factors. Using the PE examination system as a social situation

variable, we explore the influencing factors of adolescent physical exercise, such as parents' cognition, behavioral concepts and adolescent motivation, and try to find reasonable and feasible solutions.
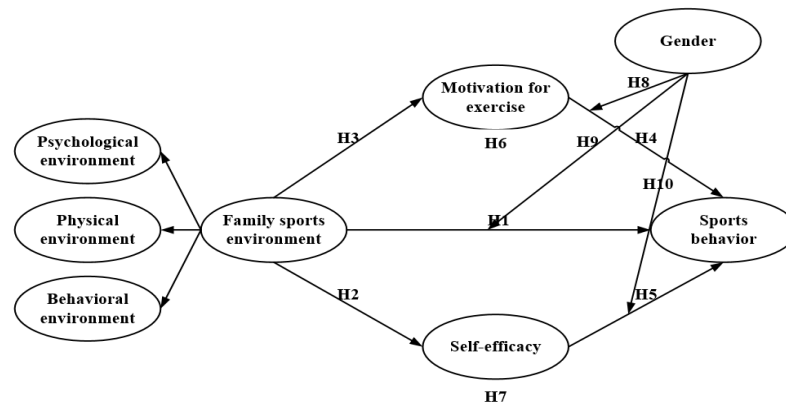
Figure 1 Conceptual Framework

Theoretical Significance

Family education plays an important role in youth physical education. Parents 'understanding of physical education, parents' own physical education behavior and family physical education consumption and other factors will affect the physical education behavior of teenagers. At present, family physical education is neglected by many families. Therefore, the research of this paper aims to provide scientific theoretical guidance for the stable development of multi-systems and multi-perspectives, and provide theoretical basis for enriching the family sports system.

Practical Significance

Through research in this paper, strengthen the construction of family physical education, give full play to the potential of family physical education, help school sports to carry forward the spirit of "fusion", promote teenagers develop good physical exercise habits, at the same time, improve adolescent personality, moral mental health, vigorously promote the healthy development of adolescent physical and mental health.

Research Methodology

Study design

This chapter begins with an overview of the study design, including the study framework, hypothesis, data collection process, data analysis tools, and techniques. The study aims to investigate the influence of family sports environment (including psychological, physical, and behavioral environment) on sports motivation, self-efficacy, and sports behavior in adolescents.

Data collection process

Questionnaire design: The questionnaire covers family income, family sports consumption, parents 'sports experience, parents' sports attitude and parents 'attitude towards their children's participation in sports activities. Also, measures of exercise self-efficacy and measures of the home sports environment were included.

Validity and reliability test: In order to ensure the quality and reliability of the questionnaire, the study conducted rigorous validity (including content validity, structure validity, etc.) and reliability tests. The reliability test results showed that the reliability coefficient of each scale was greater than 0.7, indicating the high reliability of the questionnaire.

Data analysis tools and techniques

Descriptive statistics: It is used to describe the basic characteristics and distribution of the samples. Correlation analysis: Quantifies the linear relationship between the variables, to provide the basis for the subsequent path analysis and structural equation model (SEM). Structural Equation Model (SEM): used to explore the causal relationship between family physical environment (psychological, physical, behavioral environment) and adolescent sports behavior. Through statistical software such as AMOS and Mplus, the SEM model was constructed and estimated the parameters, tested the fit of the model and evaluated the significance of the path between variables.

Evaluation of model fitting

Various indicators were used to evaluate the fit of the SEM model, including absolute adaptation index (such as GFI value, AGFI value, RMSEA value), value-added adaptation index (e. g., NFI, RFI, IFI, TLI, CFI value, etc.) and parsimony adaptation index (such as

PGFI value, PNFI value, CN value, etc.). These indicators provide an important basis for evaluating the accuracy and reliability of the model.

Research Results

Sample information

500 questionnaires were distributed offline from 16 September to 23 November 2023, and 464 valid questionnaires were collected.

Validity and Reliability Assessment

Reliability analysis

The reliability analysis results in the formal survey show that the reliability coefficients of PsyE, PhyE, BE, ME, SE, SB are 0.937,0.946,0.895, 0.928, 0.807,0.898 and 0. respectively, and the overall reliability of the questionnaire is 0.957, all greater than 0.8. It can be considered that the formal survey data has good credibility, as follows:

Table 1 Reliability analysis results

Variable	Cronbach's coefficient	Number of terms
PsyE	0.937	16
PhyE	0.946	34
BE	0.895	38
ME	0.928	11
SE	0.807	6
SB	0.898	7
Total	0.957	112

(PS:PsyE means Psychological Environment， PhyE means Physical Environment， BE means Behavioral Environment， ME means Motivation for Exercise, SE means Sel-efficacy, SB means Sports behavior)

Validity analysis

The KMO value of the formal survey is 0.925> 0.5, which is suitable for factor analysis, specifically as follows

Table 2 Validity analysis results

Kaiser-Meyer-Olkin Measure of Sampling AdSEacy.		0.925
Bartlett's Test of Sphericity	Approx.Chi-Square	54927.530
	df	6216
	Sig.	0.000

In the formal survey, the validity analysis uses the confirmatory factor analysis, which mainly reports the model fit, aggregation validity, and differentiation validity. The results of model adaptation show that X^2 / df is 2.050 <5, RMSEA is 0.048 <0.1, CFI, TLI and IFI are 0.873,0.870 and 0.873 respectively, all greater than 0.8. The model adaptation indexes all reach the recommended value, indicating that the measurement model has good fit, as follows

Table 3 Model fit results

	X^2	df	X^2/df	RMSEA	CFI	TLI	I FI
Recommended Values	-	-	< 5	< 0.1	> 0.8	> 0.8	> 0.8
Values	9528.653	4649	2.050	0.048	0.873	0.870	0.873

the discriminatory validity of the measurement model is reported, and the correlation coefficient between the AVE square root of the latent variable is mainly observed. The test standard is that the AVE square root value of the latent variable should be greater than the correlation coefficient between the variable and other variables. The results show that the AVE square root of PsyE is 0.779, which is greater than the correlation coefficient of PsyE and ME of 0.414. The AVE square root of PhyE is 0.72, a value greater than the correlation coefficient of PhyE and ME of 0.445. The AVE square root of BE is 0.773, which is greater than the correlation coefficient between BE and ME is 0.475, and the AVE square root of BE is 0.774, as follows

Table 4 Correlation coefficient results

Variable	PsyE	PhyE	BE	ME
PsyE	0.779			
PhyE	0.339***	0.72		
BE	0.342***	0.338***	0.773	
ME	0.414***	0.445***	0.475***	0.774

(PS: PsyE means Psychological Environment, PhyE means Physical Environment, BE means

Behavioral Environment, ME means Motivation for Exercise, * for p <0.05, * * for p <0.01, * * * * for p <0.001)

Confirmatory Factor Analysis

Measurement Model of Independent Variables

Table 5 Correlation coefficients between variables and AVE square root values

Construct	AVE	Square Root of AVE
PsyE	0.60	0.774
EP	0.50	0.707
SEs	0.65	0.806
SF	0.62	0.787
BE	0.55	0.742
FSE	0.58	0.761

PsyE (Psychological Environment): The AVE for PsyE is approximately 0.60 with a square root of 0.774. This suggests that PsyE has good convergent validity .

EP (Electronic Product): The AVE for EP is 0.50, and the square root is 0.707. This indicates that EP also has acceptable convergent validity .

SEs (Sports Equipment): The AVE for SEs is 0.65, and its square root is 0.806.This suggests that the construct is well represented by its items.

SF (Sports Facilities): The AVE for SF is 0.62, and its square root is 0.787, indicating good convergent validity.

BE (Behavioral Environment): The AVE for BE is 0.55, and its square root is 0.742, which is within the acceptable range for convergent validity.
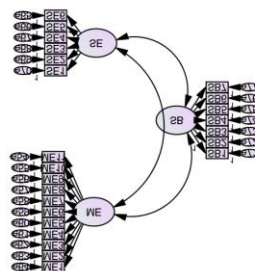
FSE (Family Sports Environment): The AVE for FSE is 0.58, and its square root is 0.761, indicating strong convergent validity.
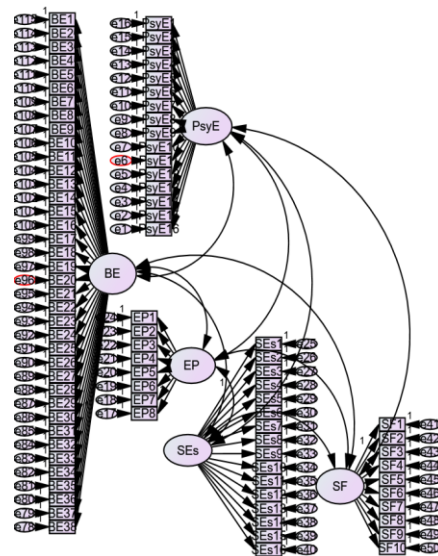
Figure 2 Model of Independent Variables

Measurement Model of Mediators and Dependent Variable

The path result diagram of this study model is reported, specifically as follows:

Figure 3 Model of Mediators and Dependent Variable

Table 6 Correlation coefficients between variables and AVE square root values

Construct	AVE	Square Root of AVE
ME	0.615	0.785
SE	0.590	0.768
SB	0.729	0.854

Motivation for Exercise (ME): The AVE of 0.615 suggests that the construct explains a reasonable amount of variance in its indicators, which is above the threshold of 0.50.

Self-efficacy (SE): The AVE of 0.590 is also above the threshold, indicating acceptable

convergent validity.

Sports Behavior (SB): The AVE of 0.729 shows excellent convergent validity, as it is well above the threshold of 0.50.

Overall, the results confirm that the constructs of ME, SE, and SB have acceptable levels of both convergent and discriminant validity. These results suggest that the constructs can be reliably used in further analysis within the SEM framework.

Hypothesis test
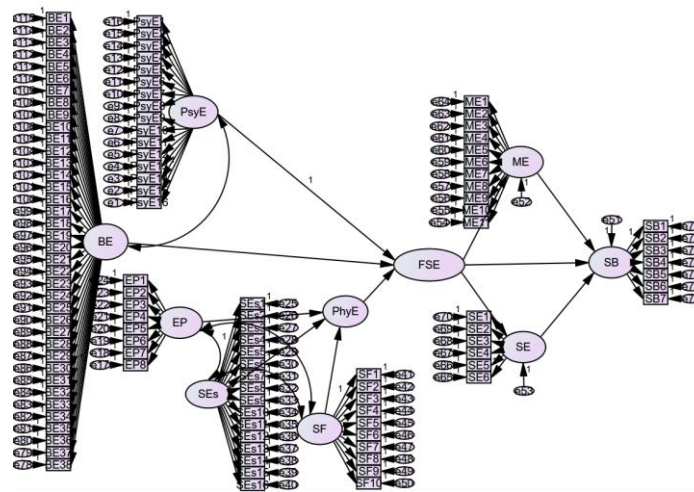
Figure 4 SEM Diagram

Now the structural equation model, mainly observe the model fit, the non-standardized coefficient between the latent variables and the observation items, and the path coefficient between the latent variables. The results show that X^2 / df is 1.423 <5, RMSEA is 0.030 <0.1, CFI, TLI and IFI are 0.963,0.962 and 0.964 respectively, which are greater than 0.8. The model adaptation index reach the recommended value of the academic community, indicating that the structural model has good adaptation, as follows

Table 7 Model fit results

	X^2	df	X^2/df	RMSEA	CFI	TLI	IFI
Recommended Values	-	-	< 5	< 0.1	> 0.8	> 0.8	> 0.8
Values	43068.886	6091	7.07	0.030	0.963	0.962	0.964

Research Discussion

1. Independent Variables to Dependent Variable

The family sports environment emerged as the strongest predictor, with psychological support, access to equipment, and behavioral modeling playing crucial roles. Self-efficacy positively impacted sports behavior, with adolescents overcoming barriers when confident in their abilities. Both intrinsic and extrinsic motivations influenced sports behavior, with team sports and personal achievements being enjoyable, and external rewards acting as initial motivators. The interplay between these factors highlighted the complex nature of sports behavior, with a supportive family environment fostering self-efficacy and motivation, creating a reinforcing cycle. The combined insights from quantitative data and interviews provide a foundation for designing effective strategies to enhance adolescent sports behavior.

2. Independent Variables to Mediators

The physical environment, represented by the availability and convenience of sports facilities at home, also shows a significant positive relationship with motivation for exercise and self-efficacy.

Behavioral aspects of the family sports environment, including parental modeling of active lifestyles and joint participation in sports activities, further enhance both motivation for exercise and self-efficacy.

Both motivation for exercise and self-efficacy emerge as key mediators, translating the influence of the family sports environment into actual sports behavior.

3. Independent Variables, Mediators, and Dependent Variable

The family sports environment, encompassing its psychological, material, and behavioral components, exerts a substantial influence on sports behavior both directly and indirectly through the mediators.

Motivation for exercise serves as a key intermediary variable, translating the effects of the family sports environment into concrete behavioral outcomes.

Self-efficacy, the second mediator, plays an equally critical role. The family sports environment directly shapes adolescents' confidence in their ability to participate in sports.

The mediating roles of motivation for exercise and self-efficacy are interrelated and complementary. While motivation explains why adolescents choose to engage in sports, self-efficacy explains how effectively they engage and persist in these activities.

4 Independent Variables, Moderator, and Dependent Variable

Gender also serves as a significant moderator in the relationship between the family sports environment and sports behavior. Boys and girls exhibit distinct responses to the material, behavioral, and psychological dimensions of their family environments, reflecting their differing needs and motivations.

Conclusion

In this study, the motivation for exercise and sports behavior of primary and middle school students in Taiyuan were investigated, and the family sports environment of adolescents was measured. On the basis of integrating social ecological model, self-determination theory and value-expectation theory, we explore the relationship between family sports environment, motivation for exercise and sports behavior. The main research results and conclusions are summarized as follows:

1)The family sports environment questionnaire and the adolescent daily physical behavior questionnaire used in the institute have good credit validity.

2)Demographic variables have certain effects on family sports environment, motivation for exercise and youth sports behavior.

3)Adequate and convenient family sports facilities not only ensure that teenagers can participate in more sports activities, but also help to improve the level of autonomy motivation.

4)The supportive environment provided by parents (encouragement, role model and logistical support) can positively predict adolescent physical activity and better stimulate and cultivate adolescent autonomy motivation; conversely, the inhibitory environment provided by parents (screen atmosphere, screen utilization) negatively affects adolescent physical activity and autonomy motivation.

5) Parents 'expectations and beliefs and values about their children's participation in physical activity influence their children's participation in physical education behavior and their motivation for exercise.

6)Family sports environment influences teenagers' physical behavior through motivation for exercise , and motivation for exercise is the internal mechanism for teenagers to participate in physical activities.

References

Alexandr, A.,et.al.. (2016). Role of physical education on the formation of a healthy lifestyle outside of school hours. *Journal of Physical Education and Sport*, *16*(2), 335.

Bae, J., Won, D., Lee, C., & Pack, S. M. (2020). Adolescent participation in new sports: Extended theory of planned behavior. *Journal of Physical Education and Sport*, *20*, 2246-2252.

Bailey, R. (2010). *Young people's voices in physical education and youth sport* (pp. 1-7). M. O'Sullivan, & A. MacPhail (Eds.). London: Routledge.

Belsky, J. (1981). Early human experience: A family perspective. *Developmental Psychology, 17*(1), 3-23.

Byrne, B. M. (2013). *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming* (3rd ed.). Routledge.

Call, K. T., Riedel, A. A., Hein, K., McLoyd, V., Petersen, A., & Kipke, M. (2002). Adolescent health and well-being in the twenty-first century: a global perspective. *Journal of research on adolescence*, *12*(1), 69-98.

Cao, Yu-Tang. (2016). A study on the current situation of the family sports environment for suburban middle school students in Nanjing. *Bulletin of Sport Science & Technology Literature, 24*(11), 91.

Davison, H. K., Maraist, C., & Bing, M. N. (2011). Friend or foe? The promise and pitfalls of using social networking sites for HR decisions. *Journal of Business and Psychology*, *26*, 153-159.

Han, Hui, & Zheng, Jia- Kun. (2016). A review of youth physical activity research in Western countries: An analysis from the perspective of social ecology. *Sports Science, 36*(5), 388-405.

Kaji, M., & Ono, Y. (2021). Study on learning strategies in elementary school physical education. *Journal of Physical Education and Sport*, *21*, 3211-3217.

Lindsay, A. C.,et. al.. (2006). The role of parents in preventing childhood obesity. The Future of children, 169-186.

Guo- Long., M. (2019). *A study on the influence of family sports environment on junior high school students' extracurricular physical exercise* (Master's thesis). Shihezi University.