



## The Influence of Family Structure Differences on Physical Activity of Children and Adolescents in China-Taking Social Capital and Health Behavior as Mediating Factors

Bei Lyu<sup>a</sup>, Defa Zhang<sup>\*b</sup> & Yanchao Yang<sup>c</sup>

<sup>a</sup> Chinese Graduate School, Panyapiwat Institute of Management, Nonthaburi, 11120 Thailand

<sup>b</sup> School of Basic Education, Taihu University of Wuxi, Wuxi, 214064 China

<sup>c</sup> Faculty of Education, University of Macau, Macau, 999078 China

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### Abstract

This research aimed to test the effect of social capital and health behavior between family structure and family health and to promote the formation of youth physical exercise awareness and behavior, not only the need to optimize the quality of family social capital, but also to pay attention to the construction of family social capital related factors. This paper explores the impact of social capital investment and health behavior acquisition on the degree of completion of the recommended amount of physical activity for children and adolescents under different family structures, based on the relationship between family structure and family health. In the study, the survey targeted children and adolescents aged 7-18 from 13 provinces and cities in China were conducted. After three stages, each administrative class selected 20 samples, and the final sample of 93,600 students was obtained. This study used a multi-level logistic regression model to verify the research hypothesis. The research found that the family structure differences in physical activity among children and adolescents have shown a diversified trend of development. The more stable the family structure is, the better the family sports atmosphere will be. The hierarchy of family structure has a positive effect on the shaping of children's adolescent health behavior. The better the social capital is, the better the community sports atmosphere will be, and the higher the possibility of children and adolescents completing the recommended amount of physical activity will occur.

### Introduction

With the rapid economic development during the period of social transformation, issues such as health inequalities and imbalances caused by the differentiation of social family structure have attracted much attention

from society. With the continuous improvement of social production level and increase in life materials, people's medical burden and pressure of life and work have gradually become the focus of social topics, leading to the intensification of social competition, forcing social members of different family structures to resolve the

\* Corresponding Author  
e-mail: 1137381421@qq.com

current health crisis through healthy lifestyle and behavior habits. At the same time children and adolescents obesity in China is a growing problem. According to the IOTE standard survey, the overweight rate of children and adolescents has increased from 4.06% in 1991 to 13.58% in 2015. The obesity rate has climbed from 1.02% to 7.45%, the overall development trend is not optimistic (Shujing, 2020).

In recent years, an increase of scholars begun to pay attention to the relationship between family structure and family health. Rahul (2013) that the family structure is the interaction of family members, the state of mutual influence, and the relatively stable mode of connection. On the dimension of family structure and family health, Xu Guangming that the impact of family structure on urban and rural residents is not statistically significant, and changes in family structure do not have a significant impact on mental health, while the significance of family function is very significant (Xu, Zhang, et al, 2014; Turner & Thiede, 2016). Covelman (2018) and Dan (2008) note that family structure refers to the composition and interaction of family members, the state of mutual influence, and the model formed by the combination of different cooperation between family members. Family structure is the maintenance of marriage and the unity of the common life relationship formed based on the connection with the bloodline; this includes not only the generation, the structure, but also the population structure, and the combination of the two forms as a unified formation. Dan notes (2008) that family structure and socialization of adolescents is based on the explanatory power of family structure classification. Xiao Qin, et al. (2013) points out that family health includes family members' physical, psychological, social, cultural, developmental, and spiritual integrity and a dynamic and stable state. The family can continue to maintain the best health status and maximize the health of family members by providing resources, guidance, and support. Yu Xiaowei believes that family conditions, economic conditions, living habits, medical decision-making, medical insurance, and other factors affect the health of urban residents (Yu, Hu, 2010). Yan Liping believes that the degree of education is an important factor influencing the health of residents. Factors as location, family size, and family income affect the health of residents in different degrees (Yan, Wei, et al, 2012). Although the above scholars have discussed the impact of family structure on family health from different roles, there is still a lack of empirical research

on physical activity and family structure of children and adolescents in China and other countries (Itoi, A., Yamada, Y., & Nakae, S., et al., 2015). There is a lack of theoretical system construction, and research on the impact of social capital and health behavior on physical activity are even rarer. Therefore, this study investigated the differences in physical activity and physical behavior of children and adolescents under different family structure levels by investigating social capital and health behaviors in the field of children and adolescents, and to verify the impact of social capital and health behavior on physical activity and further explore the differences in the family structure of physical activity of children and adolescents (Aires L., 2010; Rauner, 2013). Hongwei (2010) notes that the family's attitude to sports, physical exercise atmosphere, and network structure have significant meanings to the formation of adolescents' awareness and behavior of physical exercise; family cultural levels and attitudes to sports have a significant impact on the cognitive level of adolescents' physical exercises, and family economic income has direct participation in sports by teenagers Exercise and participation in paid physical exercise are significant. To promote the formation of youth physical exercise awareness and behavior, not only needs to optimize the quality of family social capital, but also the need to pay attention to the construction of family social capital related factors. Fangmei (2017) noted that based on the perspective of social capital theory and constructed the social credibility cultivation mechanism of youth sports clubs from three levels of self-discipline, mutual discipline, and heteronomy.

## Objectives

1. To test the effect of social capital and health behavior between family structure and family health.
2. To promote the formation of youth physical exercise awareness and behavior.

## Conceptual framework

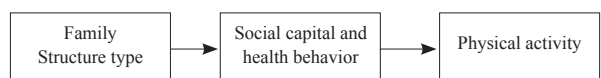


Figure 1 Conceptual framework

Based on the assignment of dependent and independent variables, the hypotheses of this study are put forward: (1) the family structure differences of physical activity among children and adolescents have

shown a diversified development trend, (2) the more stable the family structure is, the better the family sports atmosphere will be, (3) the hierarchy of family structure has a positive effect on the shaping of children's adolescent health behavior, (4) the better the social capital is, the better the community sports atmosphere will be, and the higher the possibility of children and adolescents completing the recommended amount of physical activity will be.

## Research methodology

### 1. Population and samples

Following the research methods of Hongwei (2007) and Fangmei (2017). In this study, the authors surveyed 13 provinces and cities in China in 2018, such as Heilongjiang, Beijing, Liaoning, Shandong, Zhejiang, Henan, Hubei, Guangdong, Sichuan, Gansu, Yunnan, Guizhou, and Chongqing. The survey targets children and adolescents aged 7-18. With *the National Student Physical Fitness and Health Survey Implementation Plan in 2014* as the data information collection benchmark (Ministry of Education of the People's Republic of China, 2014), a three-stage sampling survey was conducted in 13 provinces and cities using the PPS sampling method. 1180 counties (districts and municipalities) of 13 provinces (cities) were used as primary sampling units, and cluster sampling was carried out according to the order of *Tabulation on the 2010 Population Census of the People's Republic of China by County*. In the first stage, each county (city) selected 15 counties (autonomous regions and municipalities) as samples for random sampling, and a total of 195 survey counties (districts and municipalities) were selected. In the second stage, the sample counties were screened on a small scale, and 4680 administrative classes were randomly selected from the first grade of primary school to the third grade of senior high school. In the third stage, a second random sampling was conducted in the selected classes. Each administrative class selected 20 samples, and the final sample of 93,600 students was obtained.

### 2. Research instrument

#### 1. Dependent variable: recommended amount of physical activity

*Global recommendations on the health of physical activity* by World Health Organization proposes specific recommendations for the health of children and adolescents aged 5-17 years, and also proposed that children and adolescents aged 5-17 years should take

health exercises in their families, schools and communities mainly to improve the health of heart, lungs, muscles, and bones and to reduce the risk of chronic diseases and non-communicable diseases. It is suggested that daily activities should be more than 60 minutes (Tanaka, et al., 2018; Wang, 2019). The questionnaire included questions such as "how many days a week can your intensity of physical activity be more than moderate intensity while your physical activity lasts more than 60 minutes". The questionnaires explained the moderate intensity and vigorous intensity, that is, moderate intensity is indicated as slight sweating, rapid breathing, and rapid heart beating, achieved through walking, cycling, etc. Vigorous intensity is indicated as massive sweating, tachycardia, achieved through basketball, running, aerobics, etc. (Wang, 2019). In this study, the recommended amount of physical activity is moderate to vigorous-intensity physical activity (MVPA) with daily activity greater than 60 minutes, and the dependent variable equals 0 when the recommended amount of physical activity fails to reach the standard, and the dependent variable equals 1 when the recommended amount of physical activity reaches the standard (Tanaka, C., Reilly, J.J., & Tanaka, M., et al., 2016).

#### 2. Independent variable: family structure type

From the perspective of sociology, Zhou Chuanzhi (2003) divided family types into the nuclear family, main family, united family, and other families according to different family structures, and pointed out that nuclear family has become the main form of family in China. Wang Yuesheng (Wang, 2000) believes that the traditional family refers to the family type with complete family members and perfect functions, mainly including the Stem Family and the Nuclear Family. According to the commonly used method of Murdock's (1967) sociological research, this study divides family types into Joint Family (parents and more than one couple of married children), Stem Family (parents and married children) and other families, with other families as the reference group. They are defined as 1 = Joint Family, 2 = Stem Family and 3 = Other Families (Zhou Chuanzhi, 2003).

#### 3. Mediating variables: social capital and health behavior

Mohnen, et al. (2012) point out that the sports environment climate under family structure needs the support of social capital and the cultivation of health behavior habits. It mainly includes six variables:

family expenditure on sports, community support, family-friend interaction, sense of school inclusion, campus friendship, and social trust. They are all generated by Principal Component Analysis. Family expenditure on sports is mainly the parents' expenditure on sports activities for their children. The related problems are: Is family condition supportive of needs of various sports and fitness consumption? (1 = not supportive, 2 = not supportive, 3 = general, 4 = supportive, 5 = very supportive), Are various recreational sports activities available in your neighborhood? (1 = never, 2 = seldom, 3 = about once a week, 4 = many times a week, 5 = everyday) My friends often invite me to participate in fitness activities? (1 = never, 2 = seldom, 3 = about once a week, 4 = many times a week, 5 = everyday) I think I belong to this school. The school seems to be my home. (1 = very inconsistent, 2 = inconsistent, 3 = general, 4 = consistent, 5 = very consistent), I can ask for help from my friends in the school (1 = very inconsistent, 2 = inconsistent, 3 = general, 4 = consistent, 5 = very consistent), the teachers in my school take good care of us and give us a lot of support (1 = very inconsistent, 2 = inconsistent, 3 = general, 4 = consistent, 5 = very consistent). In addition to social capital, the formation of healthy behavior habits is also crucial to the healthy development of children and adolescents' physique (Singh, G.K., et al., 2008; Mohnen, S.M., et al., 2011). Michael, (2004) point out that social capital is a positive product of human interaction. The positive outcome may be tangible or intangible and may include useful information, innovative ideas, and future opportunities. Larson, (2006) also state that dietetic behavior refers to people's eating habits and behaviors related to food consumption, and decompression behavior refers to release pressure.

In this study, dietary behavior, sleep behavior, decompression behavior, and exercise behavior are selected as the main indicators of healthy behavior habits evaluation. Principal Component Factor Analysis (PCA) was used to analyze the healthy behavior variables. The related issues are: I have enough intake of protein, vegetables and fruits to maintain nutritional balance every day (1 = very inconsistent, 2 = inconsistent, 3 = general, 4 = consistent, 5 = very consistent), I can punctually go to bed and get up every day and learn regularly (1 = very inconsistent, 2 = inconsistent, 3 = general, 4 = consistent, 5 = very consistent), I can respond positively to difficulties (1 = very inconsistent, 2 = inconsistent,

3 = general, 4 = consistent, 5 = very consistent), number of weekly fitness activities (1 = never participated, 2 = 1 - 2 times a week, 3 = 3-4 times a week, 4 = 5 times a week, 5 = once a day).

### 3. Data collection

The authors survey 13 provinces and cities in China in 2018, such as Heilongjiang, Beijing, Liaoning, Shandong, Zhejiang, Henan, Hubei, Guangdong, Sichuan, Gansu, Yunnan, Guizhou, and Chongqing. The survey targets children and adolescents aged 7-18. The author will reveal that the relationship between family structure type and physical activity. Wang Yuesheng (Wang, 2000) and Fangmei (2017) noted that based on the perspective of social capital theory and constructed the social credibility cultivation mechanism of youth sports clubs from three levels of self-discipline, mutual discipline, and heteronomy. Tao & Shang, (2018) believe that the traditional family refers to the family type with complete family members and perfect functions, mainly including the Stem Family and the Nuclear Family. It is suggested that daily activities should be more than 60 minutes (Tanaka, et al., 2018; Wang, 2019). Wang Yuesheng (Wang, 2000) believes that the traditional family refers to the family type with complete family members and perfect functions, mainly including the Stem Family and the Nuclear Family. Larson, (2006) also states that dietetic behavior refers to people's eating habits and behaviors related to food consumption, and decompression behavior refers to release pressure.

#### Research on quality control

Before the investigation, every researcher has been trained in strict data input requirements, so that they can understand the source and use of data in the process of investigation. In the process of data input, the working procedure of two-person input and verification is adopted to ensure the accuracy and rigor of data input, eliminate the data deviation caused by personal factors, and strictly conduct rigorous checks on the logicity and rigor of data. The control variables mainly include: gender (1 = male, 2 = female), family type is divided into ("1 = Joint family", "2 = Stem family", "3 = other families"). Social capital and health behavior include six variables: family expenditure on sports, community support, friend interaction, sense of school inclusion, campus friendship, and social trust, which are generated by principal component analysis.

### 4. Data analysis

Based on the basic characteristics of the

physical activity of children and adolescents, this paper used a multi-level logistic regression model to verify the research hypothesis. To differentiate the intra-group and inter-group variations of the model, a zero-model is established to analyze the significance of the difference of social capital to dependent variables, to judge whether the multi-level model is valid, and to analyze the influence of the change of social capital on dependent variables. Regression equation significance test was used to test the fitting degree of the model. The significance level was below 0.05. Pearson significance P value was observed (Shen, & Wan, 2015).

## Results

### 1. Basic characteristics of physical activities of children and adolescents in different family structures

**Table 1** Basic Characteristics of Physical Activities of Children and Adolescents

Family stratum	30 min MVPA	60 min MVPA	Vigorous intensity	Physical activity factor	Achievement rate of physical activity (%)
Joint family	3.28	2.27	1.27	-0.07	2.61
Stem family	3.57	2.01	1.	0.04	2.28
Other families	3.12	1.37	1.03	0.27	4.08
Total	3.61	1.8	1.49	0.03	2.37

Note: MVPA: Moderate-to-Vigorous Physical Activity  
60 min MVPA: Daily moderate or high-intensity physical activity than 60 minutes  
30 min MVPA: Daily moderate or high-intensity physical activity than 30 minutes

### structures

It is found that the family structure differences in physical activity among children and adolescents have shown a diversified trend of development. Hypothesis 1 is consistent with this result. Children and adolescents from Joint Families and Stem Families had higher 30-minute MVPA and 60-minute MVPA than other families, and the overall participation of 60-minute MVPA was insufficient.

### 2. Relevant analysis of family structure and

**Table 2** Regression Model of Family Structure and Social Capital

Variable	Family expenditure on Sports	Community support	Family-friend interaction	Sense of School inclusion	Campus friendship	Social trust
Joint family (Reference to other families)	0.038***	0.017***	-0.023***	0.045***	0.011***	0.042***
Stem family (Reference to other families)	0.248***	0.341***	0.287***	0.375***	0.284***	0.291***
Gender (Reference to Female)	0.047***	0.217***	0.153***	-0.027**	0.346***	0.017***
Household registration (Reference to Rural Area)	0.176***	0.083***	0.071***	0.129***	0.274***	0.341***
Intercept term	-0.245***	-0.237**	-0.348***	-0.268***	-0.346***	-0.413***
Sample size	70200	70200	70200	70200	70200	70200
Adj.R <sup>2</sup>	0.048	0.029	0.071	0.081	0.037	0.049

Note: \*P<0.05, \*\*P<0.01, \*\*\*P<0.01. Joint Family: parents and more than one couple of married children. Stem Family: parents and married children

### social capital

In this study, the factor of expenditure on sports, factor of community support, the factor of family-friend interaction, factor of sense of school inclusion, the factor of campus friendship, the factor of social trust are adopted as the dependent variables; the family structure is adopted as the independent variable; gender, household registration is adopted as control variables to build a linear regression model (shown as in Table 2). Table 2 shows that higher expenditure on sports in the joint family and the stem family compared with other families will be related to higher community support for the physical activity of children and adolescents, more interaction between relatives and friends, stronger sense of school inclusion, better campus friendship, and the better social trust. The level of family structure has a positive impact on the creation of a family sports atmosphere, the more stable the family structure is, the better the family's sports atmosphere will be, and Hypothesis 2 is verified.

### 3. Correlation analysis of family structure and

**Table 3** Regression Model of Family Structure and Health Behavior

Variable	Dietary behavior	Sleep behavior	Decompression behavior	Exercise behavior
Joint family (Reference to other families)	0.027***	0.194***	0.234**	0.126***
Stem family (Reference to other families)	0.364***	0.324***	0.286***	0.162***
Gender (Reference to female)	0.027	0.216**	0.134	0.327***
Household registration (Reference to rural area)	0.841***	0.261***	-0.231***	0.164***
Intercept term	-0.924***	-1.217***	-2.057***	
Cut1 cons				-1.284***
The intercept term is Y = ax <sup>2</sup> + bx + c, where C is the intercept term, and the specific intercept value in the regression linear equation is a statistical indicator.				
Cut2cons				-0.812***
Cut3cons				0.342***
Sample Size	60841	59617	61542	59417

Note: \*P<0.05, \*\*P<0.01, \*\*\*P<0.01.



**health behavior**

Regression models constructed with dietary behavior, sleep behavior, decompression behavior, and exercise behavior as dependent variables, family structure as the independent variable, and gender and household registration as control variables (as shown in Table 3). Table 3 shows that a more stable family structure is related to a more standardized dietary behavior of children and adolescents, a more regular sleep behavior, a better decompression behavior, and more exercise behaviors. The level of family structure has a positive impact on the shaping of children’s and adolescents’ health behaviors. The more stable the family structure is, the better the health behavior of children and adolescents will be, and Hypothesis 3 is verified.

**4. Analysis of the impact of family structure**

**Table 4** Zero-model of Achievement Rate of Physical Activity

Fixed effects	Coefficient	Standard error	Degrees of freedom	Z	P
Intercept	-3.721	0.0427	1208	-68.87	0.000
Random effect	Deviation Value	Standard Deviation	Degrees of Freedom	Chi-square	P
Family structure variation	1.064	0.064	1208	672.798	0.000

**on physical activity of children and adolescents**

In this study, 60-minute MVPA per day was selected as the dependent variable to construct the zero model. The results are shown in Table 4. The inter-school variation chi-square test showed that there was a significant difference in the recommended amount of physical activity between children and adolescents in different schools. The coefficient of influence of the inter-school coefficient of variation on the total coefficient of variation was 0.244, only 24.4% of the differences in physical activity among children and adolescents come from schools, 75.6% come from different family structures.

The multi-level logistic regression model construction continued based on the zero models. The results are shown in Table 5. Among them, the independent variable of Model 1 is family structure, the control variables are gender and household registration, and in Model 2, six independent variables are added based on Model 1: the factor of expenditure on sports, the factor of community support, the factor of family-friend interaction, factor of sense of school inclusion, the factor of campus friendship, the factor of social trust. In Model 3, four independent variables are added based

**Table 5** MVPA Random Intercept Model for Children and Adolescents

Variable	Model 1	Model 2	Model 3	Model 4
Joint family (Reference to other families)	0.452	0.248***	0.327***	0.341***
Stem family (Reference to other families)	0.409***	-0.023	-0.013	-0.121
Gender (Reference to Female)	0.816***	0.345***	0.627***	0.724***
Household registration (Reference to rural area)	0.216***	0.245***	0.314***	0.421***
Expenditure on sports		0.652***		0.273***
Community support		0.752***		0.314***
Family-friend interaction,		0.637***		0.218***
Sense of school inclusion		0.227***		0.267***
Campus friendship		0.341***		0.341***
Social trust		0.637***		0.227***
Dietary behavior (Reference to rural area)			-0.127***	-0.271*
Sleep behavior (Reference to rural area)			0.037***	-0.137
Decompression behavior (Reference to rural area)			-0.018	-0.142*
Exercise behavior (Reference to rural area)			0.027	0.018
Intercept term	-4.271***	-4.165***	-4.682***	-4.619***

Note: \*P<0.05, \*\*P<0.01, \*\*\*P<0.01. MVPA: Moderate-to-Vigorous Physical Activity

on model 1: such as dietary behavior, sleep behavior, decompression behavior, and exercise behavior. Model 4 covers the above dependent variables and independent variables.

According to the results of the intercept model of Table 5, the family structure has a significant positive correlation with the achievement rate of the physical activity of children and adolescents. The physical activity of children and adolescents in the stem family is 1.505 times that of the joint family (e0.409=1.505). However, there is no significant difference between the completion of the physical activity recommendation of the children and adolescents in the joint family and other families. Social capital has a positive impact on the recommended amount of physical activity for children and adolescents. Greater expenditure on sports is related with higher community support, better family-friend interaction, better community support, stronger sense of school inclusion, better campus friendship, better social trust, and greater likelihood that the recommended physical activity is completed. Comparing Model 1 and Model 2, we can see that after the social capital factor is added, the influence of family structure on whether children and adolescents complete the physical activity recommendation is no longer significant.

Health behavior has little effect on achievement rate of physical activity of children and adolescents. Only diet behavior has a significant negative correlation. Compared with children and adolescents attending rural

schools, urban children have lower achievement rate of the physical activity. Comparing Model 1 and Model 3, it is known that after adding the factor of health behavior, the family structure is still significant for the achievement rate of physical activity of children and adolescents. At the same time, after adding the family structure, social capital and health behaviors and control variables, it can be seen from Model 4 that the family structure has no significant effect on achievement rate of the physical activity of children and adolescents. Only dietary behavior has significant influence on health behavior, but the influence is relatively small. The factor of social capital still has a significant influence on the achievement rate of physical activity of children and adolescents.

By comparing Model 1 and Model 4, it can be seen that there are differences in family structure in the cultivation mode of physical activity recommendations of children and adolescents. Achievement of recommended physical activity via family structure is achieved through social capital and health behavior. There are differences in the family structure influencing the factors of social capital, the more stable the family structure is, the better the social capital is, the better the community sports atmosphere is, and the higher the possibility that the children and adolescents reach the recommended amount of physical activity, and Hypothesis 4 is verified. Therefore, social capital and healthy behavior play an important role and served as a way to improve the achievement rate of recommended physical activity for children and adolescents. But the effect of health behavior is not prominent.

## Discussion

Compared with the developed countries, China has completed the reforms in the past 30 years which has taken the developed countries over a hundred-odd year to complete. China's social structure and social stratification are also constantly developing and changing, leaving the coexistence of diversity, transition, and parallelism during social development. Based on whether the recommended amount of physical activity of children and adolescents meets the standard, this study verifies whether there is a family structure difference about the impact of social capital on children's and adolescents' health behaviors. Edwardson (2010) believe that family structure is an important factor affecting the activities of children and adolescents. The family environment plays a vital role in the development of children and adolescents' exercise behavior. Among

them, family structure has a great influence on children's activities (Biddle et al., 2011). The surrounding environment of the family has a greater impact on the convenience of children and adolescents participating in sports (He Xiaolong et al., 2017). Parental support, parent/parental company, parental education encouragement, family structure, parental education level, and family structure are positively correlated with physical activity (Danqing et al., 2019).

The study shows that the family structure difference in physical activity of children and adolescents in China has begun to take shape, but it has not formed a stable structural habit. The specific manifestations are as follows: 1) The hierarchy of family structure stability helps increase the recommended amount of physical activity to a certain degree: The more stable the family structure is, the more the children and adolescents participate in physical activity; 2) In terms of whether the children and adolescents reach the recommended amount of physical activity, there is no significant difference between children and adolescents in the joint families and other families; the physical activity of children and adolescents in the stem families reach the vigorous-intensity to a larger degree, and the probability of reaching the recommended amount is 1.505 times that of other families. Therefore, the input of social capital and the shaping of health behavior habits under different hierarchies of family structures are worthy of in-depth consideration and discussion. Physical activity of children and adolescents shows differences in family structure. Studies have shown that adolescents raised by single-parent families have poorer physical and mental health status than those raised by their parents together. Qiyun and Weiping (2015) and Wang Lingfeng (2007) believe that children and adolescents under the shackles of the traditional education of their ancestors are more likely to have emotional problems, behavioral disorders, and personality defects, which fully demonstrated that there are exist some problems in raising children in single-parent families and joint families and it is not beneficial to the growth of children and adolescents. Families with different structures have different attention and input to children's and adolescents' physical activity, and it will cause the difference in the degree of completion of the recommended amount of physical activity for children and adolescents, which will ultimately lead to different physical health statuses in different family structures. Based on the investigation and analysis of the family structure in the recommended

amount of physical activity for children and adolescents, the study finds that the degree of completion of the recommended amount in different family structures is consistent with the previous research conclusions. It is concluded that the family structure difference in physical activity of children and adolescents has shown a diversified trend of development, which verifies the correctness of Hypothesis 1.

As is pointed out in the evaluation system and evaluation methods for physical activity of children and adolescents, the sports environment that parents create for their children, their daily companionship and participation are important reference indicators (Active Healthy Kids Global Alliance, AHKGA). The difference in family economic status is one of the reasons for the difference in the health status of adolescents and parents raised by a single parent or two parents together (Li, et al., 2010), increase in sports expenditure, the central government's public expenditure on sports public services increased from 355.378 million yuan in 2008 to 834.401 million yuan in 2016, with an average annual growth rate of 11.24%, and stress is put on the importance of economic status in the family structure to the physical activity of children and adolescents (Yannis, Athanasios, & Kaliopi., 2005). As the children's first teachers, parents, whether in the strong support of sports concepts or good performance in participation behavior, will have a positive impact on children and adolescents (Zhang, Tang, & Hu, 2017). Wang Junli (2019) believes that the community sports environment and the parents' companionship will affect the degree of completion of the physical activity of children and adolescents. As is mentioned in Hypothesis 2 & 3, the more stable the family structure is and the more capital the society inputs, the more positive impact it will have on the degree of completion of the recommended amount of physical activity for children and adolescents, which proves the convergence of this study. In short, the more stable the family structure is, the higher the achievement rate of recommended physical activity for children and adolescents.

In recent years, the achievement rate of recommended physical activity for children and adolescents has aroused wide attention from society. Wang Yuesheng (2006) studies have shown that unhealthy dietary behaviors, inadequate physical activity, sedentary activity, and smoking are important factors affecting the health of children and adolescents. For example, Tanaka, C., et al. (2016) believes that 60% of each person's health

and longevity depend on their behavior and lifestyle, including the daily diet, physical exercise, etc. The formation of healthy lifestyles is crucial for the growth of children and adolescents. However, Hao (2003) has criticized that we should examine the achievement rate of recommended physical activity for children and adolescents from a systematic and continuous perspective rather than over-analyzing individual factors unilaterally. Parenting style is an important factor affecting the participation in physical activity of children and adolescents. Parents' companionship, demonstration, guidance, intervention, and the acquisition of children's and adolescents' health behavior habits are more conducive to the healthy growth of children and adolescents. In short, Singh, et al. (2008) and Sigrid Mohnen, et al. (2012) believe that the completion of the recommended amount of physical activity for children and adolescents is the cultivation and acquisition of a habit and an academic issue that needs comprehensive consideration. The hierarchy of family structure and the acquisition of healthy behaviors are important factors that affect the completion of the recommended amount of physical activity for children and adolescents, which verifies Hypothesis 4.

This paper finds that the family structure differences in physical activity among children and adolescents in China have shown a diversified trend of development. The 30-minute MVPA and 60-minute MVPA of children and adolescents in joint families and stem families are larger than those in other families, and the overall 60-minute MVPA participation is insufficient.

As for the influence of family structure and social capital on the recommended amount of physical activity for children and adolescents, compared with other families, greater expenditure on sports is related to better family-friend interaction, stronger sense of school inclusion, better campus friendship, better social trust, greater likelihood that the recommended physical activity is completed, and more social support for the physical activity of children and adolescents. Li Li, et al. (2010) points out that the central government's public expenditure on sports public services increased from 355.378 million yuan in 2008 to 834.401 million yuan in 2016, with an average annual growth rate of 11.24%.

Social capital and healthy behavior play an important role and served as a way to improve the achievement rate of recommended physical activity for children and adolescents. But the effect of health behavior is not prominent.



### Ethical Approval and Consent to Participate

The present study was carried out in accordance with the ethics standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or ethics committee. It is proven that informed written consent was obtained from all participants and clearly stated consent. Along with written informed consent to participate was obtained from the parents/guardians of the minors included in this study.

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