

# **A STUDY ON THE CURRENT SITUATION OF SPORTS ENVIRONMENT APPLICATION AMONG MIDDLE SCHOOL STUDENTS IN WENLING CITY, ZHEJIANG PROVINCE, CHINA**

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**Abstract:** The objective of this study is to examine the current state of physical education in junior high schools in Wenling City and to discuss and analyze the findings from the perspective of educational management. The findings of the study indicate that the current level of physical activity among junior high school students in Wenling City is moderate. Through the analysis of differences, it was found that there are variations in the application of school sports environments, family sports environments, community sports environments, and related group environments in the context of demographic variables. Based on these findings, the thesis presents corresponding recommendations.

**Keywords:** Middle School Students, Sports Environment, Current State of Application

## **Introduction**

The results of a survey on the physical health of young people in China indicate that this population is facing a significant challenge in this area. This issue has attracted the attention of various parties, including the General Office of the State Council, which issued a targeted document on May 6, 2016. This document, entitled "Opinions on Strengthening School Sports to Promote All-round Development of Students," marks the first time that the government has addressed this issue at the national level. The document, entitled "Development of Students' Physical and Mental Health," for the first time at the national level highlighted the importance of improving young people's physical literacy, emphasizing that it is not solely the responsibility of school physical education. Furthermore, the document underscored the necessity of integrating the improvement of physical education for young people into the broader agenda of all sectors. As a reserve army of national development, maintaining a healthy body is not only an important guarantee for the long-term development of the country, but also a necessity for the construction of socialist modernization.

Moreover, numerous studies have demonstrated that regular participation in physical exercise

can reduce the risk of obesity and cardiovascular disease in children and adolescents, enhance academic performance, elevate the level of mental health, and improve social adaptability. It can also promote the enhancement of physical self-esteem and self-confidence. The results of the students' physical health in 2018 indicate that the physical health of students has improved. However, the prevalence of obesity and myopia among students remains a significant concern. Studies have demonstrated that the development of individual exercise activities is subject to internal influences, including aspects such as cognition within the individual, and external influences, including support from others and policies. In order to effectively guide young people to actively participate in sports and achieve the effect of improving their physical fitness and health, it is necessary to make full use of the factors that influence young people's participation in sports, such as schools, families, communities, and related groups. Consequently, it is of paramount importance to investigate junior high school students' application of the physical education environment from the perspective of the physical education environment. This study is of significant value in understanding how to maintain and reinforce junior high school students' awareness of participating in physical activity in the post-epidemic era and how to encourage them to transform their heightened awareness of physical activity into physical activity.

### **Research Objectives**

- (1) The objective of this study is to gain insight into the demographic characteristics of middle school students in Wenling City.
- (2) To ascertain the current state of the implementation of physical education environments among middle school students in Wenling City.
- (3) To analyze the differences in the application of physical education environments among middle school students in Wenling City, stratified by background variables.

### **Literature Review**

#### ***Relevant research on the connotation of the sports environment***

Foreign scholars' research on the sports environment commenced earlier than that of their domestic counterparts, and with the passage of time, the content of their research has been expanded and the level of their research has been deepened. At the beginning of the 1980s, Belsky (1981) and Minuchin (1985) proposed that the sports environment is a kind of complex dynamic system, which consists of a number of interconnected sub-systems. Gattshall (2008) posits that the school sports environment is divided into two distinct domains: the physical hard environment and the humanistic soft environment. Nathan (2018) defines the physical environment of sports as the sports place and sports equipment that provides practical support for sports activities and is the material basis for students to participate in sports activities. Wang (2012) posits that the sport environment encompasses the natural,

social, and artificial environments that influence the conduct of sport. Hu (2019) posits that the term "sport environment" is a general designation for the social, natural, institutional, and physical environments in which the practice of sport occurs. In the view of Li (2021), the sports environment involved in daily exercise activities encompasses the school, family, and community sports environments.

#### ***Relevant research on sports environment measurement***

Two related studies on the measurement of sports environments at home and abroad are currently lacking. However, the majority of these studies are conducted in the form of questionnaires. Jennifer et al. (2007) developed an assessment questionnaire (Q-SPACE) involving both physical and social environments, including the physical environment, by researching Canadian middle school students' perceptions of the school sports environment. In a study examining the relationship between the sports environment in children's schools and middle-high intensity physical activity, Wang (2017) developed a questionnaire to assess the school sports environment. This included elements such as the physical education program time, physical activity equipment, and the emphasis placed by school leaders on interschool physical activity. Hu (2019) developed a questionnaire encompassing three dimensions of the physical education environment, self-efficacy, and physical activity, drawing upon various references to scholars' questionnaires. Hong (2022) developed a scale to assess the school sports environment of junior high school students in Shanghai, with the scale comprising three dimensions: school, family, and community.

#### ***Relevant research on the application of sports environments***

The earliest research on the application of sports environments was conducted in economically developed Western countries. Trickett (2010) posited that schools represent an important platform for students to engage in physical activity, and that it is crucial to consider the applicability of school sports facilities. Scully (2020) asserted that the quality of the community sports environment exerts a profound influence on the motivation of residents to participate in physical activity. Maree (2020) highlighted that parents' understanding and support for their children's participation in physical activity largely determines their children's motivation to engage in physical activity. In her 2022 study, Jingjing Hong examined the relationship between sports environments and adolescents' physical activity. She found that sports environments positively influence adolescents' physical activity. Liu (2023) additionally emphasized that, in addition to the school sports environment, the community and family are equally important factors that should not be overlooked.

#### ***Relevant research on the application strategies of sports environments***

Bian (2023) primarily investigated the physical activity of high school students and the influencing factors. The author concluded that it is essential to collaborate with various stakeholders to enhance the physical activity of high school students, which involves high school students, schools,

families, and other relevant parties. Yang (2023) posited that the impact of campus sports culture on adolescents' physical activity should be a focal point of attention, and that schools should engage in timely discussions and interpretations of pertinent policies, formulate sports rules that align with the developmental and distinctive characteristics of their own sports, and implement sports activities that align with the academic conditions and physical and mental development of their students. Yao (2023) proposed that to enhance the utilization of school sports facilities for secondary students in Chengdu City, it is essential to collaborate in four key areas: the content of sports instruction, the management of sports facilities, the integration of sports and cultural activities, and the dissemination of information about sports. Song (2023) posited that a favorable school sports environment can be created through collaboration between the school, family, and society. This environment should facilitate the development of proper physical activity among elementary school students.

### **Methodology**

The study employs junior high school students in Wenling City District as the research object. Wenling City encompasses 89 junior high schools, which serve the urban area, Binhai Town, Shitang Town, Zeguo Town, Daxi Town, Songmen Town, Ruo Heng Town, the highest peak of Wenling Town, Chengnan Town, Wugen Town, Xinhe Town, and Shiqiaotou Town. The total number of junior high school students in Wenling City is 37,800. In light of the availability of data, a random sampling method was employed to select the top 10 junior high schools in Wenling City District. A total of 500 junior high school students were randomly selected from each of the 10 junior high schools, with 50 students being surveyed electronically.

The design of the questionnaire for this study was informed by a review of the literature on the development of questionnaires for junior high school students' application of the sports environment. This included relevant research by Wang (2021), Hong (2022), and Hu (2019). The previous analysis was also considered in the construction of the measurement indexes for the scale of the application of the sports environment, which included the school sports environment, the family sports environment, the community sports environment, and the related group environment.

The questionnaire comprises four variables: school sports environment, family sports environment, community sports environment, and related group environment. The corresponding Cronbach's alpha coefficients for these variables are 0.954, 0.94, 0.926, and 0.937, respectively. All of these values are greater than 0.7, indicating that the data collected is of high reliability. Consequently, the questionnaire can be used as a follow-up analysis and research tool. The KMO value of the questionnaire was 0.977, while the Bartlett's test of sphericity value was 9678.583.

## Results

### *Demographic Analysis of Questionnaire Participants*

The survey of junior high school students in Wenling City District primarily focused on demographic variables, including gender, grade, and age. The gender distribution of the sample data is as follows: 270 girls (58.1% of the total survey sample) and 195 boys (41.9% of the total survey sample). The ratio of male to female students in the survey sample is relatively balanced. Furthermore, the grade distribution of the sample data reveals that 160 individuals were surveyed in the first grade, 152 in the second grade, and 153 in the third grade, with percentages of 34.4%, 32.7%, and 32.9%, respectively. This indicates a balanced distribution of the number of people surveyed in each grade. With regard to the age distribution of the sample data, the number of students in the age groups of 12 and below, 13, 14, 15, and 16 and above were 8, 154, 138, 146, and 19, respectively.

### *Descriptive Statistics on the application of Various Sports Environment*

1) The institutional environment exhibited the highest measurement mean score ( $M=3.94$ ), while the school sports hardware facilities exhibited the lowest ( $M=3.74$ ). The lowest score was for sports hardware facilities, indicating that junior high school students in Wenling City District were not particularly satisfied with the school sports facilities relative to the institutional environment and teacher factors.

**Table 1:** Descriptive Statistical Analysis of School Sports Environment

School Sports Environment	Mean	SD	VAR
Hardware Facilities	3.74	0.86	0.93
Teachers	3.79	0.97	0.99
Policy	3.94	0.96	0.98

2) The indicator with the highest score was parental support ( $M=3.86$ ), while the lowest was atmosphere ( $M=3.55$ ). The surveyed families demonstrated a relatively high level of understanding and support for their children's participation in physical activity, with adequate logistical support. The findings indicate that parents are deficient in fostering a conducive environment for physical activity through their own exercise habits.

**Table 2:** Descriptive Statistical Analysis of Family Sports Environment

Family Sports Environment	Mean	SD	VAR
Sports Facilities	3.57	0.98	0.94
Atmosphere	3.55	0.93	0.97
Parental Support	3.86	0.97	0.98

3) Table 3 indicates that the score for physical activity facilities is higher than that for the

physical activity atmosphere. The mean value of the measurement of community sports facilities is 3.87 points, indicating that the community sports facilities environment is relatively good. The mean value of the measurement of the community exercise atmosphere is 3.76 points, indicating that the overall environment of the community physical exercise atmosphere requires improvement.

**Table 3:** Descriptive Statistical Analysis of Community Sports Environment

Community Sports Environment	Mean	SD	VAR
Facilities	3.87	1.24	1.11
Atmosphere	3.76	1.55	1.24

4) The mean scores for the measures of peer involvement and positive peer evaluation are approximately equivalent. In comparison to other indicators, the scores of related group indicators are generally high, indicating that junior high school students in the urban area of Wenling City are generally effective in evaluating their relationships with their peers.

**Table 4:** Descriptive Statistical Analysis of Related Group Environment

Related Group Environment	Mean	SD	VAR
Peer Support and Participation	3.98	1.18	1.08
Peers' Positive Evaluation	3.95	1.07	1.04

5) The data in the Table 5 indicates that the average exercise time for junior high school students in Wenling City is 3.17, suggesting that the exercise time for junior high school students in Wenling City is approximately 21-30 minutes. Additionally, the average exercise frequency score is 3.16, indicating that these students engage in exercise one to two times per week. The average score for the intensity of exercise is 2.93, indicating that the exercise intensity is medium.

**Table 5:** Descriptive Statistical Analysis of Physical Exercise Behavior

Physical Exercise Behavior	Mean	SD	VAR
Time	3.17	1.45	1.20
Frequency	3.16	1.26	1.12
Intensity	2.93	1.93	1.39

***Differences Analysis on the the Application of Various Sports Environments Compared with Demographic Factors***

The findings of the survey indicate that there are some differences in the factors of satisfaction with online learning between different genders and grades. As demonstrated in Table 6, the t-test results for the school sports environment, teachers' factors, and institutional environment are not statistically significant ( $p > 0.05$ ). Conversely, the t-test results for the dimension of hardware facilities are significant

( $p < 0.05$ ). This indicates that male students value the hardware facilities for sports more than female students. Consequently, male students have a higher demand for the hardware facilities in the school campus.

**Table 6:** Differences in School Sports Environment Based on Gender

Dimension	Group	N	M	SD	t	p
School Sports Environment	Male	195	3.82	0.98	-0.207	0.836
	Female	270	3.85	1.02		
Hardware Facilities	Male	195	4.00	0.93	2.342*	0.02
	Female	270	3.74	0.97		
Teachers	Male	195	3.70	1.12	-1.071	0.285
	Female	270	3.84	1.18		
Policy	Male	195	3.79	1.12	-1.19	0.235
	Female	270	3.94	1.15		

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

As demonstrated in Table 7, the results of the t-test for family sports environment and its dimensions are not statistically significant ( $p > 0.05$ ). This indicates that there is no notable disparity between boys and girls in junior high school with regard to the requirements of this aspect of the family sports environment. Additionally, the space for activities at home is sufficient to fulfill their daily exercise needs. Furthermore, there is no discernible variability in the atmosphere of physical activity and parental support between the genders.

**Table 7:** Differences in Family Sports Environment Based on Gender

Dimension	Group	N	M	SD	t	p
Family Sports Environment	Male	195	3.73	0.98	0.221	0.825
	Female	270	3.70	1.01		

**Table 8:** Differences in Community Sports Environment Based on Gender

Dimension	Group	N	M	SD	t	p
Community Sports Environment	Male	195	3.70	0.96	-0.958	0.339
	Female	270	3.82	1.09		
Sports Facilities	Male	195	3.65	1.05	-2.053*	0.041
	Female	270	3.91	1.14		
Atmosphere	Male	195	3.76	1.01	0.258	0.796
	Female	270	3.73	1.12		

As illustrated in Table 8, the t-test results for community sports environment and community sports atmosphere are not statistically significant ( $p > 0.05$ ), whereas the t-test results for community sports facilities are significant ( $p < 0.05$ ). This indicates that there is a notable discrepancy between the demand for community sports facilities among junior high school students of different genders.

Specifically, girls' scores are consistently higher than boys' scores, suggesting that girls place a greater value on community sports facilities than boys.

As demonstrated in Table 9, the results of the t-test for related group environment and its dimensions are not statistically significant ( $p > 0.05$ ), indicating that there is no discernible difference in the levels of related group environment and its factors across genders.

**Table 9:** Differences in Related Group Environment Based on Gender

Dimension	Group	N	M	SD	t	p
Related Group Environment	Male	195	3.92	1.16	0.229	0.819
	Female	270	3.89	1.18		

A one-way analysis of variance (ANOVA) was employed to ascertain whether there were discernible disparities in the school, family, community, and related group sports environment and its dimensions among junior high school students of disparate grades. As demonstrated in Table 10, the results of the one-way ANOVA for the school sports environment and its dimensions are statistically significant ( $p < 0.05$ ), indicating that there are notable differences between junior high school students of different grades in their perceptions of the school sports environment and its corresponding dimensions. In the initial year of junior high school, students are still adjusting to the new academic and social demands of the transition. This period is characterized by a high level of novelty and enthusiasm about the requirements of junior high school sports and the various sports facilities in the school.

**Table 10:** Differences in School Sports Environment Based on Grade Level

Dimension	Group	N	M	SD	F	P
School Sports Environment	Grade 7	160	4.20	0.70	15.026***	.000
	Grade 8	152	3.47	1.07		
	Grade 9	153	3.82	1.07		

As demonstrated in Table 4.11, the results of the one-way ANOVA for the family sports environment and its dimensions are statistically significant ( $p < 0.05$ ), indicating a notable disparity in the evaluation of the family sports environment and its dimensions among junior high school students of different grades. The scores for all dimensions are as follows: first year > third year > second year.

**Table 11:** Differences in Family Sports Environment Based on Grade Level

Dimension	Group	N	M	SD	F	P
Family Sports Environment	Grade 7	160	4.04	0.74	11.905***	.000
	Grade 8	152	3.39	1.09		
	Grade 9	153	3.68	1.04		

As illustrated in Table 12, the outcomes of the one-way ANOVA on the community sports

environment and the community's atmosphere of physical exercise are not statistically significant ( $p > 0.05$ ), indicating that there is no discernible difference between junior high school students of different grades in the community sports environment and the community's atmosphere of physical exercise. Conversely, the outcomes of the one-way ANOVA on the community's facilities of physical exercise are statistically significant ( $p < 0.05$ ), with the scores in descending order specifically expressed as: First year, second year, third year. The reason for this phenomenon is that as junior high school students' grades increase, they have less and less free time, which results in a gradual decrease in their opportunity to participate in sports activities in the community. Furthermore, their exposure to the community sports environment is limited to sports facilities.

**Table 12:** Differences in Community Sports Environment Based on Grade

Dimension	Group	N	M	SD	F	P
Community Sports Environment	Grade 7	160	4.14	0.73	13.247***	.000
	Grade 8	152	3.73	1.06		
	Grade 9	153	3.42	1.18		
Sports Facilities	Grade 7	160	4.16	0.78	13.247***	.000
	Grade 8	152	3.77	1.15		
	Grade 9	153	3.44	1.25		
Atmosphere	Grade 7	160	4.11	0.83	12.087***	.000
	Grade 8	152	3.69	1.08		
	Grade 9	153	3.41	1.18		

As demonstrated in Table 13, the outcomes of the one-way ANOVA for related group environment and its dimensions were statistically significant ( $p < 0.05$ ), indicating that there are notable discrepancies in related group environment and its dimensions among junior high school students across different grades. The data indicates that there are significant differences in related group environment and its dimensions as the grade level of middle school students increases. This is closely related to the grade level in which middle school students live.

**Table 13:** Differences in Related Group Environment Based on Grade

Dimension	Group	N	M	SD	F	P
Related Group Environment	Grade 7	160	4.27	0.86	12.12***	.000
	Grade 8	152	3.50	1.28		
	Grade 9	153	3.90	1.22		

## Discussion

### *Current State of Physical Exercise Activities among Middle School Students and the Utilization of Various Sports Environments*

Following a comprehensive investigation and analysis, the current performance of physical exercise activities among middle school students in Wenling City District is deemed to be of a medium

caliber. The data indicates that the average score for exercise time is 3.17, the average score for exercise frequency is 3.16, and the average score for exercise intensity is 2.93. This suggests that the exercise intensity of middle school students in Wenling City District is medium.

The measurement scores of each factor of the school sports environment, as determined by the scores of each sports environment application, are close to 4, indicating a middle to high level of performance. However, the scores of each dimension vary. This finding is consistent with the conclusions of scholars such as Wang (2021) and Hu (2019). The scores of the indicators of the family sports environment also exhibited considerable variability. The highest mean score for the measure was that of parental support, while the lowest was that of the home exercise atmosphere. This is consistent with the findings of scholars such as Ho (2020) and Yoon (2023). The measurement results also indicate that there are differences in the community sports environment. The physical exercise facilities within the community scored higher than the atmosphere of physical exercise within the community.

#### ***Differences of the current state of the application of physical education environments for middle school students***

The survey results show that there are certain differences in the application of sports environment and physical exercise activities among junior high school students due to different genders, grades, and ages.

With regard to gender, there is a notable disparity in physical activity. The data indicates that boys engage in more physical activity than girls. Additionally, there are gender-specific differences in the manner in which individuals interact with the sporting environment. The gender difference in school sports environment factors is limited to the gender difference in sports hardware facilities. This finding is consistent with the conclusions of scholars such as Hong (2022). The results of the t-test for the family sports environment and its dimensions were not statistically significant. The results of the t-test for the community sports environment and community sports atmosphere were not significant, whereas the results for the community's sports facilities were significant. The results of the t-tests for the related group environment and its dimensions were not significant.

The results of the t-test for grade level dimensions were not significant. The results of the one-way ANOVA for the school sports environment and its dimensions were found to be significant. The same was true for the family sports environment and its dimensions. The same was true for the community sports environment and its dimensions. Finally, the same was true for the related group environment and its dimensions.

## **Conclusions**

1) The current level of physical exercise among middle school students in Wenling City is moderate. With regard to the measurement scores applied to each environmental factor, the

measurement scores of each factor of the school sports environment are close to 4, which is indicative of a medium to high level of performance. The scores of each indicator of the family sports environment are also different. The highest mean score is for parent support, while the lowest is for family sports atmosphere. The measurement results indicate that there are also differences in the community sports environment, with the score for community sports facilities being higher than that for community sports atmosphere. In terms of related group environment, the mean scores for peer support and participation, and positive peer evaluation are approximately the same.

2) The results of the independent samples t-test and one-way ANOVA indicated that the school sports environment, family sports environment, community sports environment, and related group environment exhibited statistically significant differences in terms of demographic variables. With regard to gender, differences were observed in the application of each sport environment. The results of the t-test for other factors of the school sports environment, family sports environment, other factors of the community sports environment, related group environment, and their dimensions were not significant, with the exception of the gender differences observed in the factors of the school sports environment for sports hardware facilities and community sports environment facilities. With regard to grade level, it can be observed that there are grade-level differences in exercise activities. Furthermore, the results of the one-way ANOVA of school sports environment, family sports environment, community sports environment, related group environment, and each of their sub-dimensions are significant.

3) Based on the preceding analysis, the following recommendations are put forth. First and foremost, it is imperative to maintain the achievements made in the school sports environment system. Concurrently, it is crucial to encourage the design and development of a comprehensive physical education curriculum and a variety of physical education activities. In the family, parents should not only provide their children with support for their participation in sports activities, but also engage in these activities themselves. In the community, it is imperative that targeted sports facilities be developed for the specific needs of young people. Furthermore, it is crucial to ensure the normal use of community sports facilities, thereby providing material protection for middle school students' physical exercise. It is important to note that relevant groups cannot ignore the role of peer support and participation.

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