

A STUDY ON THE RELATIONSHIP BETWEEN SPORTS COOPERATIVE LEARNING AND SOCIAL ADAPTABILITY OF COLLEGE STUDENTS AT PHYSICAL EDUCATION COLLEGE OF ZHENGZHOU UNIVERSITY IN HENAN PROVINCE, CHINA

Jingnan Shang ^{1*}

Ping Xu ²

¹ Master Candidate in Educational Administration, Stamford International University of Thailand

² Stamford International University of Thailand, xupprivate@hotmail.com

* Corresponding Author, E-mail: 277477902@qq.com

Abstract: This study aimed to understand the current status of sports cooperative learning and social adaptability among students at the Physical Education College of Zhengzhou University in Henan Province. To investigate the differences in sports cooperative learning and social adaptability among students under different demographic backgrounds and to analyze the relationship between them. Convenient sampling was used to select 317 students majoring in physical education. Using descriptive statistics, t-tests, one-way ANOVA analysis, and Pearson correlation analysis. The overall level of sports cooperative learning among students was high. The social adaptability was at a moderate level. There were significant gender differences in personal responsibility and positive interdependence. Male students were higher than female students and junior and senior students were significantly higher than freshmen and sophomores. There were significant birthplace differences in social skills, mixed grouping, and overall sports cooperative learning, with urban students significantly higher than rural students. There were significant gender differences in social adaptability, with males significantly higher than females. There was a significant grade difference in social adaptability, with junior and senior students significantly higher than freshmen and sophomores. There were significant birthplace differences in social adaptability, with urban students higher than rural students. There was a significant positive correlation between sports cooperative learning and social adaptability among students at the Physical Education College of Zhengzhou University.

Keywords: Physical Education Major, Sports Cooperative Learning, Social Adaptability, Physical Education College of Zhengzhou University

Introduction

With the rapid development of the economy, the process of global integration was accelerating,

the development of countries could not be separated from the constraints of the international environment, and the basic way of human interaction-cooperation was becoming more and more important to the development of human society (Sulistiyorini et al., 2019; Juliantine, 2019). Teamwork ability was crucial in the future internationalization development process (Zcan et al., 2023). The World Health Organization's concept of health has put forward new goals for physical education classes. How to effectively combine the advantages of physical education teaching with social adaptability and how to sort out the positive impact of physical education training programs on the social adaptability of college students has become highly valued content for modern physical education educators (Zhang, 2017). Both domestic and international education circles have also regarded social adaptability as an important goal for the healthy development of students (Yang & Zhang, 2012).

The Chinese education system encouraged cooperative learning, inclusive development, and mutual learning between teachers and students. The teaching methods of sports cooperative learning played an important role in promoting individual social adaptability and building a "learning society" (Yan, 2023). The sports cooperative learning teaching model could effectively promote academic and social unity and cooperation abilities, as well as independent innovation and self-positioning abilities in teams (Liu & You, 2021).

Especially in today's rapidly developing economy, society needs individuals who understand communication and have a certain ability to withstand pressure to undertake the task of building the motherland (Jiang, 2022) in order to show that college students lack the psychological preparation and ability to enter society and take on the responsibility of building the motherland (Yu, 2022). Therefore, research on social adaptability was urgent, and it was urgent to monitor the development of college students' social adaptability closely. Universities had the heavy responsibility of cultivating talents' adaptability and communication abilities. Cultivated the social adaptability of college students not only required close cooperation between society, universities, and families (Huang, 2022) but also relied on college students actively and independently combining the learned knowledge with social production practices (Ding, 2018). This study revealed a concerning issue where up to 22.1% of surveyed students exhibited psychological abnormalities by Duan & Huang (2021).

In summary, improving the social adaptability of college students through physical education practices, preventing them from not being able to integrate well into society and smoothly find employment, and enhancing their social adaptability have become important issues in current employment education and mental health education in universities (Zhou, 2017). It could be seen that the ability of sports cooperative learning has been widely valued and studied in the field of sports education, and an effective teaching theory and strategy system has been formed. It was not only a development trend of sports education but also a social demand and call of the times. It had high research significance for strengthening the cultivation and research of the abilities required for

cooperative learning among physical education students.

Research Objectives

(1) To understand the current status of sports cooperative learning and social adaptability of students majoring in physical education at the Physical Education College of Zhengzhou University.

(2) To determine the differences in sports cooperative learning and social adaptability among students majoring in physical education at the School of Physical Education of Zhengzhou University under different demographic backgrounds (gender, grade, and birthplace).

(3) To analyze the correlation between sports cooperative learning and social adaptability among students at the Physical Education College of Zhengzhou University.

Literature Review

Research on Cooperative Learning

The history of cooperative learning can be traced back hundreds of years. Still, it was explicitly proposed in the United States in the 1960s and 1970s when the Johnson brothers proposed the cooperative learning model. Johnson & Johnson (1999) established a cooperative learning center to train teachers on how to use cooperative learning for teaching projects. They believed that cooperative learning was a teaching method that promoted collaborative efforts among students and maximized individual and team learning advantages through group work. They divided cooperative learning into three types: formal cooperative learning, informal cooperative learning, and cooperative grassroots groups. Chen & Liu (2014) also established the concept of sports cooperative learning based on previous research, mainly focused on cooperative learning education. The theory and principles of cooperative learning proposed by David (2001) in the United States have formed the embryonic form of "team cooperative learning". It mainly aimed to strengthen communication and cooperation, experience emotional cognition, and achieve self-promotion and mutual promotion of learning.

Therefore, this study suggested that the definition of cooperative learning ability could refer to Fang's research results (2018). She believed that cooperative learning was the cooperation and assistance among group members, led by teachers, who assign learning tasks to students and control the teaching process. Group members collaborate, communicate, and learn together within the small group to achieve common goals. Cooperative learning ability included social skills, personal responsibility, and a combination of abilities such as mixed grouping, positive interdependence, and group self-assessment. Among them, the meaning of each dimension was that social skills were also one of the essential skills for students, which could help them improve their adaptability. The establishment of a learning group and the interaction among its members were actually a reflection of social skills. If students lacked social skills too much, the learning group quickly disbanded. If all group members had

a certain level of social skills, they could communicate and get along well, allowing the group's learning to play its role. In addition, it was also about cultivating students' interpersonal communication skills, laying a foundation for their future social and career life (Li, 2023).

Research on the influencing factors of student cooperative learning. Johnson & Johnson (2008) pointed out that effective cooperative learning requires teachers to understand the essence of social interaction. McConnell (2000) applied computer technology to promote the cooperative learning ability of isolated groups. Dong (2016) cited Jack's achievements and proposed that the most effective learning method for students was cooperative learning.

Wang et al. (2021) believed that the overall performance of the group was used as a key criterion for evaluating student learning outcomes aimed at achieving predetermined teaching objectives jointly. Chen et al. (2014) emphasized that cooperative learning aimed to provide each student with a fun experience during the learning process and integrate knowledge, emotions, willingness, and action to ensure coordinated progress in multiple teaching objectives such as cognition, emotions, and skills. Zhu (2023) showed that there were gender differences in college students' sports cooperative learning abilities. Males' cooperative learning ability in sports was stronger, and senior students' cooperative learning ability in sports was higher than that of junior students (Liu et al., 2023). Tan & Chen (2023) concluded that region had an impact on students' cooperative learning in sports, and students in urban areas were significantly higher than those in rural areas.

Wang & Hu (2017) proposed social skills, personal responsibility, mixed grouping, positive interdependence, and group self-assessment as measurement criteria. This scale was mainly a cross-disciplinary cooperative learning preparation scale. Based on Fang (2018), the ability of sports cooperative learning included a combination of social skills, personal responsibility, mixed grouping, positive interdependence, and group self-assessment. This scale was an exclusive scale for sports cooperative learning and had high internal consistency. Therefore, the measurement of cooperative learning ability was based on the above dimensions.

Research on Social Adaptability

The Sociological Dictionary compiled by Wang (1988) suggested that social adaptation could be defined as the process in which an individual or group continuously adjusts their behavior, attitude, and values to integrate better and adapt to the social environment they were in.

Tan & Duan (2020) defined social adaptability from another perspective, believing that the body-regulating state was the ability to maintain consistency with the outside world and self-balance. Xiao & Ren (2023) believed that it covered two aspects: interpersonal relationship adaptation and psychological adaptation. At the psychological level, social adaptability requires individuals to have a sense of cooperation, competition, and norms, as well as a high level of cognitive and emotional regulation abilities, especially to maintain a positive attitude and coping style when facing setbacks.

Social adaptability was the ability of individuals to adapt to changes in the external environment by adjusting their behavior and cognitive response in the process of interaction with the social environment. This ability involved not only handling interpersonal relationships but also individual psychological regulation and balance (Zhang & University, 2017).

Research on the influencing factors of social adaptability. Liu et al. (2023) explored the social adaptation of college students, including the process of changes made during their time in school to adapt to the school environment. The learning environment, living environment, and interpersonal environment were all included. Suppose students wanted to achieve a harmonious state in social life and the surrounding environment. In that case, external influencing factors must cultivate their ability to adapt to society and use this influencing environment as the basis and foundation for their comprehensive abilities. Zhang & Xia (2021) believed that the social adaptability of male students was significantly higher than that of female students. Zhang (2017) concluded that the social adaptability of senior students was significantly higher than that of female students. The results of Zhang et al. (2022) showed that the social adaptability of only children was lower than that of non-only children, and the social adaptability of rural students was lower than that of urban students.

Xie et al. (2019) explored the correlation between social adaptability and problematic behavior among college students. The study found that the higher the degree of mobile phone dependence, the lower the level of social adaptability of the group. It was suggested that the issue of mobile phone dependence among college students needed to be given attention by society and university managers.

The promotion effect of educational intervention methods on the social adaptability of college students, among which the intervention methods related to physical education were relatively rich, becoming an important reference for promoting the development of college students' social adaptability at present. Marzano et al. (2021) measured social adaptability by examining individuals' ability to interact and understand society. Parent & Lovelace (2018) measured social adaptability based on individual interpersonal communication ability, self-restraint ability, learning ability, execution ability, and expression ability. Kim (2021) measured social adaptability based on the ability to express one's awareness, thinking, emotions, and communication skills for individuals.

Wu (2014) surveyed the social adaptability of college students majoring in sports, including self-regulation, innovation awareness, self-expression ability, and interpersonal adaptability, which showed high reliability and validity.

The two perspectives of the study of social adaptation to multiple perspectives showed that scholars at home and abroad were constantly expanding and deepening the research on the relevant contents of social adaptation. It was not difficult to see that the ability to cooperate and self-orientation was indispensable in social adaptation, so the ability to unity and cooperate and the ability to manage and understand self-orientation was an important part of social adaptation (Hu & Prompanyo, 2021).

In summary, the scales had both commonalities and differences in studying students' social adaptability. Based on the integration and induction of various research reference scales mentioned above, this study used the Social Adaptability Scale for Physical Education Students designed by Wu (2014) as a research tool to conduct targeted research on self-regulation, innovation awareness, self-expression ability, and interpersonal adaptability. This scale was an exclusive scale for sports social adaptation, so this study used it as a research tool.

Research on the Relationship between Cooperative Learning and Social Adaptability of Students

Jeric (2018) found that compared to competitive games, cooperative games were more likely to stimulate positive social behavior. Yassin (2023) believed that using cooperative learning methods to teach dance course content could help enhance students' social communication skills. The construction of cooperative learning ability has played a positive role in improving the social and psychological atmosphere in the classroom, enhancing student academic performance, and promoting the healthy development of non-intellectual qualities. The view of Julianine et al. (2019) was that cooperative learning, mutual care, assistance, promotion, and communication among group members satisfy the love and sense of belonging needs of students, namely the need for communication. This teaching method formed an efficient learning mode by meeting various basic needs of students, especially spiritual and emotional needs.

Fang (2018) proposed that the direct effect between sports self-directed learning ability and social adaptability was significant, and sports cooperative learning played a partial mediating role in the relationship between sports self-directed learning and social adaptation.

Tan (2021) believed that sports cooperative learning could predict social adaptability and effectively cultivate some necessary qualities for students to enter society in the future. The teaching model of cooperative sports learning could simulate the team atmosphere of teaching very realistically into the scenario of team discussions in society, allowing students to grow and improve their abilities in teaching. Yang (2018) emphasized the importance of establishing clear and strong cooperative goals and establishing harmonious relationships among team members for efficient teamwork in the practice of applying "cooperative learning" to promote students' mental health and social adaptability in physical education teaching. It was crucial to use the "cooperative learning" teaching method in physical education teaching practice to group students reasonably and appropriately and carefully design various aspects of the course, including practical operations, homework, and teaching guidance both inside and outside of class. At the same time, it was also necessary to coordinate cooperation and communication within the student group. In this way, each student could establish a learning ability to help and collaborate within their respective abilities, thereby effectively promoting social adaptability.

Methodology

The research subjects were students majoring in physical education at the Physical Education College of Zhengzhou University, Henan Province. There were 1800 students majoring in physical education in the School of Physical Education, and the rest were students from other research institutes. Convenient sampling was conducted through electronic questionnaires, with a population size sample based on the Morgan Table (Krejcie & Morgan, 1970). Based on gender, grade, and birthplace, 320 questionnaires were distributed, and 317 were effectively collected, the effective return rate reached 99.06%.

The study selected the mature scale developed by previous researchers, adopted Fang's (2018) Sports Cooperative Learning Scale in this study, which consisted of 38 items and mainly examined the cooperative learning ability of physical education students, including "social skills, personal responsibility, mixed grouping, positive interdependence, and group self-assessment", with 5 dimensions. The Cronbach's α was 0.90, the retest reliability was 0.88. The KMO value of the original scale was 0.916, and Bartlett's sphericity test was $p < .001$, indicating a high level of validity coefficient values. The cumulative contribution rate of the five factors was 81.265%. Therefore, the questionnaire had good reliability and validity. Social Adaptability Scale used the Physical Education Student Social Adaptation Scale developed by Wu (2014). The scale consisted of 16 items, including self-regulation, innovation awareness, self-expression ability, and interpersonal adaptability, with 16 questions. The Cronbach's α was 0.874, indicating high reliability. Indicating that the reliability of the questionnaire met the statistical standards of this study and had a strong level of reliability, which could be used for further statistical analysis.

Results

Demographic Analysis of Questionnaire Participants

This study selected physical education students from the Physical Education College of Zhengzhou University, Henan Province, as the survey subjects and finally collected and organized 317 valid questionnaires. The demographic backgrounds surveyed mainly included gender, grade, and birthplace. In terms of gender, there were 151 males, accounting for 47.6%, and 166 females, accounting for 52.4%, in the valid questionnaire. In terms of grades, there were 71 freshman students, accounting for 22.4%; 86 sophomore students, accounting for 27.1%; 88 junior students, accounting for 27.8%; and 72 senior students, accounting for 22.7%. In terms of student birthplaces, there were 129 students in rural areas, accounting for 40.7%, and 188 students in urban areas, accounting for 59.3%.

Descriptive Statistics on the Levels of Sports Cooperative Learning and Social Adaptability

1) The overall mean of students' sports cooperative learning was 3.527, which was at a high level. The means of the five dimensions, social skills, personal responsibility, mixed grouping, positive

interdependence, and group self-assessment, were 3.409, 3.632, 3.396, 3.589, and 3.610, respectively. Individual responsibility was the highest, followed by group self-assessment and positive interdependence, while the mixed grouping was the lowest, as Table 1 shows.

Table 1: Descriptive Statistical Analysis of Sports Cooperative Learning among Students (N=317)

Dimensions	N	M	SD	Interpretation
Social skills	317	3.409	0.564	Moderate
Personal responsibility	317	3.632	0.439	High
Mixed grouping	317	3.396	0.588	Moderate
Positive interdependence	317	3.589	0.490	High
Group self-assessment	317	3.610	0.499	High
Overall sports cooperative learning	317	3.527	0.415	High

2) The overall mean social adaptability of physical education students was 3.413, which was at a moderate level. The means of the four dimensions of self-regulation, innovation awareness, self-expression ability, and interpersonal adaptability were 3.162, 3.312, 3.698, and 3.481, respectively. Among them, self-expression ability was the highest, followed by interpersonal adaptability, while self-regulation was the lowest, as shown in Table 2.

Table 2: Descriptive Statistical Analysis of Social Adaptability among Students (N=317)

Dimensions	N	M	SD	Interpretation
Self-regulation	317	3.162	0.566	Moderate
Innovation awareness	317	3.312	0.608	Moderate
Self-expression ability	317	3.698	0.617	High
Interpersonal adaptability	317	3.481	0.599	Moderate
Overall social adaptability	317	3.413	0.489	Moderate

Differences Analysis on the Levels of Sports Cooperative Learning and Social Adaptability Compared with Demographic Backgrounds

There were some significant differences in demographic backgrounds of sports cooperative learning and social adaptability of College Students at Physical Education College of Zhengzhou University in Henan Province, China. There were significant gender differences in personal responsibility and positive interdependence. Male students were higher than female students and junior and senior students were significantly higher than freshmen and sophomores. There were significant birthplace differences in social skills, mixed grouping, and overall sports cooperative learning, with urban students significantly higher than rural students. There were significant gender differences in social adaptability, with males significantly higher than females. There was a significant grade difference in social adaptability, with junior and senior students significantly higher than freshmen and sophomores. There were significant birthplace differences in social adaptability, with urban students

higher than rural students.

Correlation Analysis among Sports Cooperative Learning and Social Adaptability

Pearson correlation analysis was used to examine the correlation between sports cooperative learning and social adaptability among students at the Physical Education College of Zhengzhou University. As could be seen from the correlation analysis results in Table 3, the correlation coefficient between the overall mean of sports cooperative learning and the social adaptability of students r was 0.471, reaching a significant level at .001 level, indicating that sports cooperative learning was significantly positively correlated with social adaptability. The correlation coefficient between various dimensions of sports cooperative learning and the overall mean of social adaptability ranges from 0.299 to 0.467.

Table 3: Summary of Correlation Analysis of Variables

Dimensions	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Social skills	1										
2. Personal responsibility	.472**	1									
3. Mixed formation	.445**	.524**	1								
4. Positive interdependence	.584**	.537**	.643**	1							
5. Group self-assessment	.580**	.505**	.610**	.671**	1						
6. Overall social adaptability	.775**	.737**	.814**	.852**	.837**	1					
7. Self-regulation	.367**	.269**	.298**	.338**	.352**	.406**	1				
8. Innovation awareness	.401**	.257**	.281**	.330**	.335**	.401**	.510**	1			
9. Self-expression ability	.372**	.209**	.236**	.261**	.315**	.350**	.578**	.511**	1		
10. Interpersonal adaptability	.386**	.244**	.256**	.326**	.325**	.385**	.550**	.572**	.630**	1	
11. Overall social adaptability	.467**	.299**	.327**	.383**	.405**	.471**	.799**	.795**	.835**	.842**	1

Discussion

Current Status of Sports Cooperative Learning and Social Adaptability of Students Majoring in Physical Education

The overall level of sports cooperative learning among students at the Physical Education College of Zhengzhou University in Henan Province was high, and the research results of Yu & Liu (2013) also showed a high level. In this study, the personal responsibility score was the highest, while the mixed grouping score was the lowest. The content related to social skills, positive interdependence, and group self-assessment also indicated that the combined effect of multiple dimensions caused this result. The overall social adaptability of students was at a moderate level, with the highest self-

expression ability, followed by interpersonal adaptability and the lowest self-regulation ability. The research results of Xiao & Ren (2023) had certain similarities with this study, and their conclusion showed that interpersonal adaptation was relatively high. The results of this study reflected that there were differences in the social adaptability of students in different aspects.

Demographic Background Differences in Sports Cooperative Learning and Social Adaptability among Students Majoring in Physical Education

(1) Males were usually expected to demonstrate more competitiveness and dominance in sports activities, so their cognition of personal responsibility might be stronger. Females might be more likely to play auxiliary roles in teams, which might lead to a relatively weaker awareness of personal responsibility. With the improvement of grades, students' sports skills and teamwork experience gradually increased, which helped them better play their role in sports cooperative learning. Students in urban areas might be more adaptable to different populations and environments, which could help them perform well in sports cooperative learning.

(2) Males were usually expected to exhibit more self-control and decision-making abilities, which might affect the development of their self-regulation abilities. Females might be more susceptible to emotional influences and require more self-regulation to cope with different situations and pressures. It indicated that as grades improved, students gradually accumulated more social experience and interpersonal skills, which helped them better adapt to the social environment. It might be related to the wider range of interpersonal communication and the more diverse living environment of students in urban areas. Students in urban areas might be more likely to adapt to different social contexts and populations, demonstrating higher social adaptability.

Relationship between Sports Cooperative Learning and Social Adaptability of Students Majoring in Physical Education

The research results showed that the better the performance of students in sports cooperative learning, the stronger the social adaptability. The correlation between various dimensions of sports cooperative learning and social adaptability showed that the correlation coefficient with social skills was the highest, indicating that in sports cooperative learning, students' social skills play an important role in improving their social adaptability. Secondly, the correlation coefficient between various dimensions of social adaptability and the self-regulation dimension of sports cooperative learning was the highest, indicating that self-regulation ability had a significant impact on students' performance in sports cooperative learning in social adaptability (Ma, 2013; Tan, 2021). In summary, there was a significant positive correlation between sports cooperative learning and social adaptability among students at the Physical Education College of Zhengzhou University. There were significant differences between various dimensions, among which social skills and self-regulation were the two dimensions.

Conclusions

1) The overall level of sports cooperative learning among students at the Physical Education College of Zhengzhou University in Henan Province was high, with the highest personal responsibility and the lowest mixed grouping. The social adaptability was moderate, with the highest self-expression ability and the lowest self-regulation.

2) There were significant gender differences in the dimensions of personal responsibility and positive interdependence in sports cooperative learning among students at the Physical Education College of Zhengzhou University, Henan Province. Male students were significantly higher than female students. There were significant grade differences in sports cooperative learning among students majoring in physical education. Juniors and seniors were significantly higher than freshmen and sophomores. There were significant differences in social skills, mixed grouping, and overall birthplaces in sports cooperative learning among students majoring in sports. Students in urban areas were significantly higher than those in rural areas.

There were significant gender differences in the social adaptability of students majoring in physical education at the Physical Education College of Zhengzhou University in terms of self-regulation dimension and overall, with males significantly higher than females. There was a significant grade difference in the overall social adaptability of physical education students, with juniors and senior students significantly higher than freshman and sophomore students. There were significant differences in the social adaptability of physical education students in four dimensions: self-regulation, innovation awareness, self-expression ability, and interpersonal adaptability, as well as overall differences in birthplaces. Students in urban areas were significantly higher than those in rural areas.

3) There was a significant positive correlation between sports cooperative learning and social adaptability among students at the Physical Education College of Zhengzhou University.

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