



Perceived Participation to Kindergartens, Teachers, and Parents of Physical Education in Xi'an, Shaanxi Province, China

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Abstract

Background and Aim: This study addresses the scarcity of empirical evidence on children's participation in Physical Education (PE) and the perspectives of teachers and parents within the Chinese context. The study aims to determine the level of student engagement in PE and identify factors influencing their participation. It also seeks insights into how teachers and parents view PE's importance in children's well-being.

Materials and Methods: Conducted in Xi'an, Shaanxi Province, China, the study involved 201 kindergartens, 200 parents, and 65 teachers. Analytical methods included tables, frequencies, percentages, mean proportion analysis, standard deviation proportion analysis, confidence interval analysis, one-sample z-score test for proportion, two-sample z-score test for proportion, and correlation analysis. The research also led to the development of a guide for creating a kindergarten's physical literacy model.

Results: Kindergartens exhibit a moderate perception of PE, with males generally having a higher perception than females. Teachers view PE positively, considering it moderately beneficial for physical and mental development. However, barriers to teaching PE include limited event space, security concerns, venue and equipment issues, weather-related inconveniences, and parents' lack of sports proficiency. Parents have a favorable view of PE, acknowledging its positive impact. Barriers for parents include safety concerns, extracurricular workloads, limited interest in after-school sports, venue limitations, and academic pressures. Kindergartens express enthusiasm for sports like basketball and football, but challenges may reduce physical activity and lead to frustration.

Conclusion: The perception of physical education in kindergartens varies among different stakeholders, with gender differences and positive attitudes from teachers and parents. However, numerous barriers, including space limitations and safety concerns, need to be addressed to ensure a more effective and enjoyable PE experience for children in this educational setting.

Keywords: Perception Engagement; Kindergartens; Teachers; Parents; Physical Education; China

Introduction

Physical education is crucial for the development of motor skills, knowledge, and physical fitness in students (Martinek et al., 2019). However, the issue of physical inactivity among children and adolescents is a growing concern worldwide (Guthold et al., 2010). This problem extends beyond high-income countries to low- and middle-income nations due to economic development and changing living environments (Qin et al., 2010; Zhu et al., 2011; Hallal et al., 2012).

In China, physical education for young children has been a part of the national curriculum since the 1980s, and it has gained increasing attention in recent years (Wang & Xiong, 2019). Efforts in China include improving teacher training, curriculum development, and policies related to early childhood physical education. Despite these efforts, challenges like regional imbalances, teacher shortages, and repetitive teaching methods persist (Billioud & Thoraval, 2015).

The decline in children's physical activity is a global concern, with insufficient physical activity reported in many countries. Studies have shown that physical education has various benefits for children, including improving health outcomes and academic performance (Janssen & Leblanc, 2010). It is recommended by organizations like the World Health Organization that children engage in at least 60 minutes of daily physical activity (World Health Organization, 2010).

Children and adolescents have been demonstrated to benefit from physical education in a variety of ways (Janssen & Leblanc, 2010; Timmons et al., 2012). Participation in physical education as a kid has a major influence on adult health outcomes, including enhanced bone mineral density and, indirectly, obesity





prevention (Loprinzi et al., 2012). Furthermore, again, they added that physical education in schools has numerous advantages, namely physical education allows kids to enhance their physical activity, improve their grades and standardized test results, and stay on task in the classroom (the Centers for Disease Control and Prevention, 2022). As a result, the World Health Organization (WHO) advises children and adolescents aged 5 to 17 to engage in at least 60 minutes of moderate to vigorous physical exercise every day (World Health Organization, 2010). According to Chen Ying, Wang Kaizhen, and Wang Yi's article "The Development of Children's Physical Education in China since the founding of the People's Republic of my country," published in 2011; children's physical activities should strengthen their physical coordination, improve their physical sensitivity, and improve their physical fitness. To accomplish all-round growth of morality, intellect, physique, beauty, and labor, physical education for children is a necessary and significant link in the development of morals, intelligence, physique, beauty, and labor. That is why three parts of children's physical education implementation methodologies have evolved since that time: 1. Physical education concepts for children's instructors must be enhanced; 2. Physical education equipment for children must be flawless; 3. Children's physical education must be planned and developed scientifically. The implementation of the 14th Five-Year Plan is now underway. After the 14th Five-Year Plan was presented, it was once again clarified that children's physical education played a pivotal role in early childhood education, based on the form, guiding ideology, and main goals mentioned in the 14th Five-Year Plan for education and sports, as well as the current situation of early childhood physical education development in some kindergartens.

While there is research on the importance of physical education, empirical evidence on children's engagement in physical education and the perspectives of teachers and parents is lacking in China. This study aims to investigate the perceptions, attitudes, and realities related to physical education among kindergartens, teachers, and parents in Xi'an, Shaanxi Province, China.

Therefore, this study comes to study the Perception Engagement of Kindergarten, Teachers, and Parents in Physical Education Based on an Investigation in Xi'an, Shaanxi Province, China by specifically seeking answers to questions such as: what is the perception, attitude, and reality of kindergartens, teachers and parents on sports in Xi'an, Shaanxi Province? What is the development effect of kindergartens' participation in physical education in Xi'an, Shaanxi Province? What are the barriers to teaching Physical Education among kindergartens in Xi'an, Shaanxi Province, China? What kind of kindergarten sports game can be built to promote the development of kindergarten sports in Xi'an, Shaanxi Province?

Research Objective

The general objective of this thesis is to investigate the perception engagement of kindergarten, teachers, and parents in physical education in Xi'an, Shaanxi Province, China.

Literature Review

Theoretical Framework of the study

Self-efficacy theory by Bandura served as the study's guiding principle. An individual's belief in her ability to carry out behaviors required to accomplish particular performance attainments is referred to as self-efficacy (Bandura, 1994). The self-efficacy hypothesis places a strong emphasis on the individual and how that person views his or her own personal skills as major factors in successful outcomes. Thus, self-efficacy theory and the broader social cognitive theory that encompasses it both vehemently support the democratic ideal that holds that everyone is competent for achievement so long as they have the opportunities and self-efficacy required to accomplish so. The explicit focus of self-efficacy theory is on how people and groups may be given a sense of agency that will help them achieve their goals. This is significant because the self-efficacy hypothesis rejects the idea that people who are successful now are essentially superior to those who are not. Instead, the self-efficacy theory would contend that people who are currently having difficulties could not have had access to the mastery experiences or role-modeling required to achieve high levels of self-efficacy. According to self-efficacy theory, the state and society have to give everyone enough chances to engage in mastery experiences, get supportive social persuasion, and





see positively reinforcing role models. This will help everyone develop a strong feeling of self-efficacy. However, it is crucial to note that the self-efficacy hypothesis does not imply that key results are solely due to individuals having strong self-efficacy beliefs. Instead, as was previously said, the foundation of self-efficacy theory is in a theory of triadic reciprocal determinism, in which personal factors (such as self-efficacy beliefs), behavior, and environmental factors constantly interact. Self-efficacy theory places a strong emphasis on the relative importance of personal characteristics, but it also recognizes the significant influence that behavioral and contextual factors have on results. This theory of triadic reciprocal determinism supports the notion that self-efficacy beliefs will play a bigger role in influencing human behavior and, ultimately, outcomes if environmental impacts are consistent (i.e., everyone has a level playing field). Noting that the self-efficacy theory does not promote a Pollyannaish worldview in which optimistic expectations for the future serve as the primary predictor of future outcomes is also significant. Positive thinking has recently come under fire from several members of the popular press. In books like *Bright-Sided: How the Relentless Promotion of Positive Thinking Has Undermined America* by Barbara Ehrenreich, it is claimed that an excessive emphasis on and belief in the advantages of positive thinking has hurt many people's lives as well as the society at large. There is a lot to be written about recognizing the dangers of too-optimistic worldviews or self-help methods that claim that positive thinking has practically miraculous effects. However, academics, medical professionals, and the general public must understand the difference between these less rigorous ideas of positive thinking and theories with empirical foundations like self-efficacy. It is not suggested that self-efficacy beliefs are a cure-all for all of the world's ills or that they are the sole psychological element that may influence significant life outcomes. Instead, self-efficacy theory suggests a more realistic worldview in which chances to succeed or witness success may encourage favorable assessments of one's potential for success in the future, increasing the likelihood of subsequent success.

The Role of Physical Education in Child Development

Physical education, integral to children's holistic development across the psychomotor, cognitive, and affective domains, forms the foundation of physical literacy (Zollman, 2012). Recent trends in the psychomotor domain have shifted from performance-based criteria to a focus on long-term health and the reduction of sedentary behaviors, driven by the increasing prevalence of children with diabetes and heart disease risk factors. Studies now stress the importance of children acquiring fundamental motor skills to boost their confidence in engaging in physical activities throughout their lives (Telford et al., 2012; Morgan, 2008). In the cognitive domain, research has revealed that enhanced physical education time can lead to improved school attendance, discipline, and focus, with potential indirect benefits to cognitive function through increased energy, brain blood flow, and enhanced alertness. Participation in physical education equips children with new physical skills and the ability to apply them in various contexts, fostering cognitive skills such as understanding, application, analysis, evaluation, and creation. However, more comprehensive research is needed to explore the long-term relationship between physical education, cognitive function, and academic success (Bailey et al., 2009). Moreover, physical activity, particularly through organized physical education, has been linked to enhanced psychological well-being, increasing children's resilience, and their capacity to manage stress and anxiety (Biddle & Mutrie, 2001). The enjoyment of physical education is associated with intrinsic motivation, a key component of psychological well-being (Kmiecki & Harris, 1996). Notably, creating environments that allow individual skill development is crucial as not all children may inherently find physical education enjoyable, emphasizing the significance of mastery learning environments. This study underscores the importance of children's perceptions, motivations, and attitudes towards physical education as an essential subject.

Children's Self-Perception and Competence in Physical Education

The advantages of physical activity for children are well-established, and numerous factors influence their attitudes and participation in physical education and activities. Research has shown that children's





motivations, self-perceptions, and the environment in which they live significantly impact their engagement in physical activities (Hastie et al., 2014). Self-perception theory suggests that children learn about their abilities and attitudes by observing their behavior and the context in which it occurs (Bem, 1972). Positive self-perception, such as feeling competent in sports, can lead to increased participation (Crocker et al., 2000). Some children may avoid physical activity due to a perceived lack of competence (Ries et al., 2012). The learning environment also plays a crucial role, and inclusive physical education programs that acknowledge diverse abilities are essential (Sherman et al., 2010). Encouraging all children, regardless of their physical capabilities, to feel valued and enjoy physical activities is vital for their overall well-being.

Historical Review of Physical Education in China

In the historical review of Physical Education in China, the late 19th and early 20th centuries marked significant developments. During the Qing Dynasty, physical education was introduced in missionary schools and westernization schools, aimed at educating young government officials in Western languages, cultures, and military training. Gymnastics instruction was a focal point in these early physical education classes. The Republic of China, established after the Qing Dynasty, drew inspiration from Japan's educational reforms and began to incorporate physical education into its curriculum. This period saw an expansion of the curriculum to include a variety of activities like ball games, kung fu, and track and field competitions. However, due to the high cost of education, these opportunities were primarily accessible to the wealthy and powerful. The establishment of the People's Republic of China initiated educational reforms to make physical education more accessible to a broader population of school-aged children and adolescents. Before this, China had experienced turbulent times, including the War of Resistance Against Japan and the Chinese Civil War, which lasted a total of eighteen years and significantly impacted the nation's educational system and the growth of physical education. The frequent changes in educational policies during this period led to haphazard and laissez-faire management of physical education in schools. The literature review provided in this study offers a comprehensive exploration of relevant topics. It starts with a focus on self-efficacy theory by Bandura, emphasizing the role of self-belief in achieving success. It then discusses the importance of physical education in child development across various domains, emphasizing the need for fundamental motor skill development, cognitive function, and psychological well-being. Furthermore, it examines how children's self-perception and competence impact their engagement in physical education, underlining the significance of positive self-perception and inclusive learning environments. Lastly, it offers a historical review of physical education in China, detailing its evolution and its current state. This literature review sets the stage for the empirical investigation of kindergarteners, teachers, and parents' engagement with physical education in Xi'an, China.

Conceptual Framework

This conceptual framework succinctly outlines the study's essential components. The "Input" encompasses variables like kindergartens, teachers, and parents' involvement in Physical Education, the role of Physical Education in children's physical and mental development, barriers to teaching Physical Education in kindergartens, and the creation of sports games for children. The "Process" involves data collection through Previous Research, Focus Group Discussions, and Questionnaires, analyzed using descriptive and inferential statistics to understand kindergarteners' perspectives on physical education. The anticipated "Output" includes informing future curriculum development and educational policies for promoting physical competence and lifelong health in children.



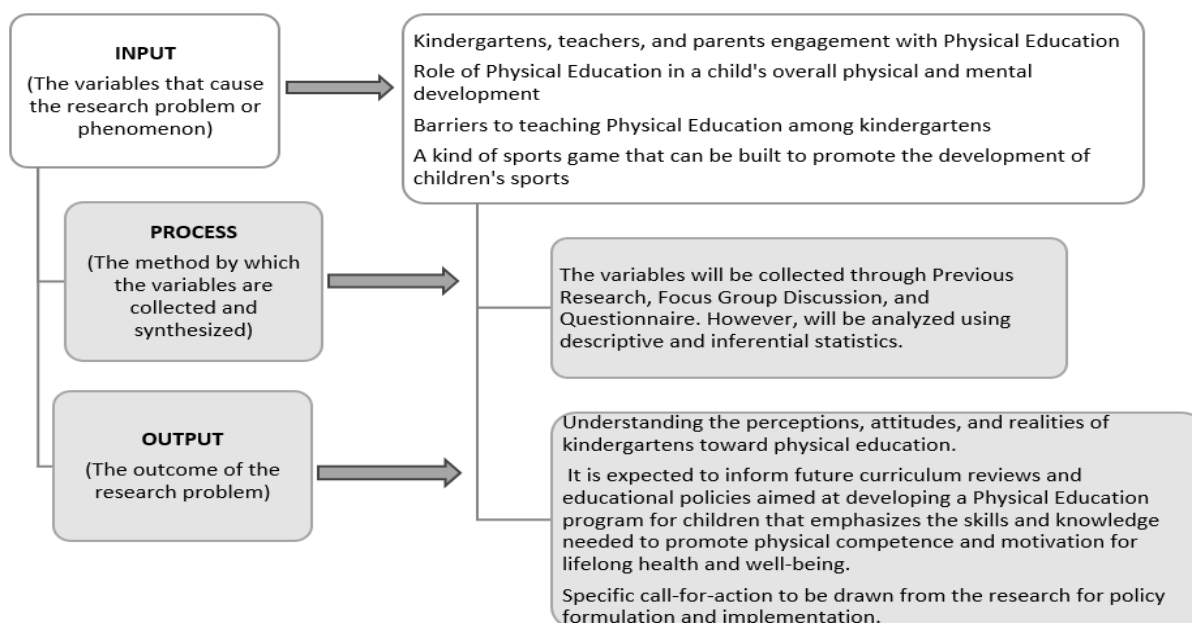


Figure 1: Conceptual Framework

Methodology

Population and Samples

This study centers on kindergartens in Xi'an, Shaanxi Province, China, specifically targeting kindergarten students aged 3 to 6 due to their critical developmental stage, allowing the acquisition of fundamental motor skills and engagement in diverse activities. It is essential to comprehend their present attitudes towards physical activity before the school environment exerts its influence, emphasizing unstructured, non-competitive physical play. The research encompasses a sample size of 201 kindergartens, 200 parents, and 65 teachers. Drawing from previous studies that analyze various aspects of Physical Education, including parental influence, motivational factors for children, and identified barriers affecting schools and teachers, this study aims to investigate the current perceptions and values of Physical Education among kindergartens, parents, and teachers, recognizing the multifaceted nature of children's participation in Physical Education and physical activity.

Procedure for Study

Before the start of the study, three kindergarten school principals will have discussions about the study's focus and whether the results will be of interest to the school community. The kindergartens to be sampled, on the other hand, will be approached and invited to participate in the study. This will be accomplished through pre-arranged phone meetings with each school's principal to explain the research's purpose and how the information gathered will be used. Each principal will be given a participant information sheet outlining the procedure for collecting data from teachers, parents, and kindergarten students. Information sheets will be provided to the school to distribute to teachers and parents once each principal has signed the relevant consent form.

Research Instruments

The research instruments are the tools to be used to collect, measure, and analyze data. As the study will make use of a primary source of data, the primary source of data will be collected through a questionnaire carefully designed and administered to the respondents which include teachers, parents, and kindergartens.



However, to determine the reliability of the instrument used in the study, the corrected questionnaire will be administered randomly to the targeted people in the study areas and the reliability of the data will be analyzed through the use of the Cronbach's Alpha Reliability Test which is a test used by researchers to demonstrate that the instrument constructed or adopted in research fit the purpose (Taber, 2018). Technically speaking, Cronbach's alpha is not a statistical test – it is a coefficient of reliability (or consistency) represented by alpha (the UCLA Statistical Consulting Group, 2020). However, Cronbach's alpha (α) can be written as a function of the number of test items and the average inter-correlation among the items where for conceptual purposes.

The formula for the Cronbach's alpha is:
$$\alpha = \frac{N \bar{c}}{v + (N - 1) \bar{c}}$$

where N is equal to the number of items, \bar{c} is the average inter-item covariance among the items, and equals the average variance. Cronbach's alpha increases as the number of items increases, as can be seen from this formula. Also, alpha will be low if the average inter-item correlation is low. As a result, Cronbach's alpha rises in tandem with the average inter-item correlation (holding the number of items constant). However, based on the rule of thumb, a research instrument is considered reliable when the reliability coefficient is at least 0.70, thus, indicating that the questionnaire is reliable for the data collection (UCLA Statistical Consulting Group, 2020).

Data Collection: method and process

The methodological frameworks for parents, teachers, and children will be discussed separately, and each section will identify the data collection tools to be used. For kindergartens, teachers, and parents the data will be collected using a questionnaire survey.

Study 1 - Teachers: To assess teachers' perception and value of Physical Education, a three-stage process will be employed. First, a literature review will identify key issues and barriers to delivering Physical Education. This will guide focus group sessions with teachers to gather more insights and identify areas of interest. The final step involves developing and distributing a questionnaire based on the data collected and comparing the results to previous research.

Study 2 - Parents: Similarly, data collection protocols for parents will follow a three-stage process. A literature review will focus on how parents influence their children's participation in Physical Education. This information will shape the discussion guide for focus group sessions, aiming to identify and explore key areas. A questionnaire based on insights from focus groups will be distributed to parents to understand their perceptions and influence on their children's Physical Education participation.

Study 3 - Kindergartens: This study involving children will employ a method that allows them to express their feelings about participating in Physical Education classes. A review of previous data collection tools for evaluating children's participation in physical education will be conducted. Data will be collected through oral interviews with kindergarteners to understand their perceptions of their involvement in Physical Education, and the findings will be compared with previous research.

Data Analysis

The analysis involves using tables, frequencies, and percentages for examining the statistical characteristics of the kindergartens' responses on their perception, attitude, and reality toward physical education as well as teachers and parents' perception engagement in physical education; mean proportion analysis, standard deviation proportion analysis, confidence interval analysis, to select the most view of the majority of the kindergartens on their perception, attitude, and reality toward physical education as well as teachers and parents' perception engagement in physical education; one-sample z-score test for proportion to significantly measure whether the average response selected by the kindergartens, teachers, and parents through the use of the mean and standard deviation proportion analyses as well as confidence interval





analysis significantly valid; and two-sample z-score test for proportion to significantly measure whether there is gender difference among the views of the kindergartens' responses on their perception, attitude, and reality toward physical education; and correlation analysis to measure how other responses of the kindergartens on their perception, attitude, and reality toward physical education are related with their interest on sports. However, the analysis will be executed using software such as SPSS and STATA, depending on the task to be performed where the data presentation and analysis will be executed independently for each of the three focuses, namely kindergartens, teachers, and parents. After reporting the data into the respective software, the results will be processed and reported as outputs which will be reported, interpreted, and concluded.

Criteria to be used in interpreting the data

After reporting the data into the respective software, the results will be processed and reported as outputs which will be reported, interpreted, and conclusions based on the results obtained.

Z-Score Test for Proportion

The Z-score test is a statistical way of testing a null hypothesis against an alternative hypothesis on two mean groups when either the population variance is known or when the population variance is not known but the sample size is large $n \geq 30$. So, specifically, we want to compare the mean of two samples with a sample size equal to or greater than 30. However, the test formula can be depicted as follows:

$$\text{z score} = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

Z-score test formula compares the z-statistic with the z-critical value to test whether there is a difference in the means of two populations. In hypothesis testing, the z critical value divides the distribution graph into the acceptance and the rejection regions. If the test statistic falls in the rejection region, then the null hypothesis can be rejected otherwise it cannot be rejected.

Confidence Interval

In this study, the confidence interval technique will be employed to calculate the confidence intervals of 95% or 5% level of significance. The confidence interval formula can be stated as follows:

$$\text{Confidence Interval} = [0.5 * X^2_{2N, \alpha/2}, 0.5 * X^2_{2(N+1), 1-\alpha/2}]$$

where X^2 is the Chi-Square critical value, N is the number of observed events, and α is the significance level which will be at a 5% level. However, systematically the steps to follow are: counting the observed events, finding the Lower Confidence Interval Bound, finding the Upper Confidence Interval Bound, and Finding the Confidence Interval.





Results

This section presents the results and analysis of the study using tables, frequencies, percentages, mean proportion analysis, standard deviation proportion analysis, confidence interval analysis, one-sample z-score test for proportion, two-sample z-score test for proportion, and correlation analysis.

Table 1: Correlations Analysis of the Items for Examining the Kindergartens' Perception, Attitude, and Reality toward Physical Education

		Kindergartens' Interest in Sports	Kindergartens' Physical Activity in Spare Time	Kindergartens' Physical Activity during Physical Education Classes	Kindergartens' Most of the Time Activity during Recess
Kindergartens' Interest in Sports	Pearson Correlation	1	.341**	.511**	.318**
	Sig. (2-tailed)		.000	.000	.000
	N	201	201	201	201
Kindergartens' Physical Activity in Spare Time	Pearson Correlation	.341**	1	.531**	.354**
	Sig. (2-tailed)	.000		.000	.000
	N	201	201	201	201
Kindergartens' Physical Activity during Physical Education Classes	Pearson Correlation	.511**	.531**	1	.444**
	Sig. (2-tailed)	.000	.000		.000
	N	201	201	201	201
Kindergartens' Most of the Time Activity during Recess	Pearson Correlation	.318**	.354**	.444**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	201	201	201	201

** . Correlation is significant at the 0.01 level (2-tailed).

The result of the correlations analysis of the items for examining the kindergartens' perception, attitude, and reality toward physical education is presented in Table 1 to investigate whether the kindergartens' physical activity in spare time, physical activity during physical education classes, and most of the time activity during recess are related to their interest on sports. This is because; interest is the foundation to engage or perform in anything. In fact, without interest in something; either there is no tendency to be involved in it or not likely to perform better. According to the table, the kindergartens' physical activity in spare time, physical activity during physical education classes, and most of the time activity during recess are related to their interest in sports as there is evidence of correlation on such relation at a 1% level of significance.

Table 2a: Perception Engagement of Teachers on the Role / Importance of Physical Education in Kindergartens' Overall Physical and Mental Development

Variable	Mean	Std. Err.	[95% Conf. Interval]	
Active children have reduced levels of antisocial conduct.	2.184615	.0901183	2.004583	2.364647
Active children communicate better with their classmates.	2.830769	.0517447	2.727397	2.934141
Active children communicate better with their teachers.	2.861538	.0484218	2.764805	2.958272
Physically active children develop good social skills.	2.861538	.043173	2.775291	2.947786
In establishing physical activity habits in children parents play a more important role than schools.	2.692308	.0724671	2.547538	2.837077
The amount of physical activity a child has each day is heavily influenced by the school environment.	2.523077	.0823562	2.358551	2.687602



Variable	Mean	Std. Err.	[95% Conf. Interval]
A positive attitude toward physical education in kindergarten school leads to physically active adults.	2.553846	.0821314	2.38977 2.717922

Table 2b: One-Sample Z-test for testing whether there is a significance difference among the various responses on Perception Engagement of Teachers on the Role / Importance of Physical Education in Kindergartens' Overall Physical and Mental Development

z – core on active children have reduced levels of antisocial conduct			
z = - 3.4997			
Pr(Z < z) = 0.0004	Pr(Z > z) = 0.0009	Pr(Z > z) =	0.9996
z – core on active children communicate better with their classmates			
z = 6.3923			
Pr(Z < z) = 1.0000	Pr(Z > z) = 0.0000	Pr(Z > z) =	0.0000
z – core on physically active children develop good social skills			
z = 7.4664			
Pr(Z < z) = 1.0000	Pr(Z > z) = 0.0000	Pr(Z > z) =	0.0000
z – core on active children communicate better with their teachers			
z = 8.3742			
Pr(Z < z) = 1.0000	Pr(Z > z) = 0.0000	Pr(Z > z) =	0.0000
z – core on establishing physical activity habits in children parents play a more important role than schools			
z = 2.6537			
Pr(Z < z) = 0.9950	Pr(Z > z) = 0.0100	Pr(Z > z) =	0.0050
z – core on the amount of physical activity a child has each day is heavily influenced by the school environment			
z = 0.2802			
Pr(Z < z) = 0.6099	Pr(Z > z) = 0.7809	Pr(Z > z) =	0.3909
z – core on a positive attitude toward physical education in kindergarten school leads to physically active adults			
z = 0.6556			
Pr(Z < z) = 0.7428	Pr(Z > z) = 0.5144	Pr(Z > z) =	0.2572

Source: Author's Computation

Table 2a presents teachers' perceptions of physical education's role in kindergarten children's physical and mental development, indicating that the majority view it as significant. However, when teachers were asked about other roles, they mentioned collaborative, facilitative, participative, inspirational, transformative, accompanying, encouraging, and guiding roles for physical education. Table 2b's one-sample t-tests show significant differences in these perceptions, confirming that active children communicate better with classmates and teachers, develop good social skills, and establish physical activity





habits influenced more by parents than schools. Nonetheless, active children may not have reduced antisocial conduct, daily physical activity may not heavily depend on the school environment, and a positive attitude toward kindergarten physical education doesn't necessarily lead to active adults. Thus, among the seven aspects assessed, only four were validated, while others were not.

Table 3a: Perception Engagement of Teachers on the Barriers to Teaching Physical Education among Kindergartens

Variable	Mean	Std. Err.	[95% Conf. Interval]	
The curriculum is overburdened, and I am unable to devote the necessary time to Physical Education each week.	2.092308	.1045206	1.883504	2.301112
Busy classroom schedules force me to miss a Physical Education class for the week.	2	.1074172	1.785409	2.214591
Outside activities with the children can be more difficult and require more of my attention.	2.353846	.1038462	2.14639	2.561303
Students at my school expect Physical Education classes to run in the same manner as their weekend sport.	2.538462	.0761985	2.386238	2.690686

Table 3b: One-Sample Z-test for testing whether there is a significance difference among the various responses on Perception Engagement of Teachers on the Barriers to Teaching Physical Education among Kindergartens

z – core on the curriculum is overburdened, and I am unable to devote the necessary time to Physical Education each week		
z = -3.9006		
Pr(Z < z) = 0.0001	Pr(Z > z) = 0.0002	Pr(Z > z) = 0.9999
z – core on busy classroom schedules force me to miss a Physical Education class for the week		
z = -4.6547		
Pr(Z < z) = 0.0000	Pr(Z > z) = 0.0000	Pr(Z > z) = 1.0000
z – core on outside activities with the children can be more difficult and require more of my attention		
z = -1.4074		
Pr(Z < z) = 0.0821	Pr(Z > z) = 0.1641	Pr(Z > z) = 0.9179
z – core on students at my school expect Physical Education classes to run in the same manner as their weekend sport		
z = 0.5048		
Pr(Z < z) = 0.6923	Pr(Z > z) = 0.6155	Pr(Z > z) = 0.3077

Source: Author's Computation

Table 3a presents teachers' perceptions of barriers to teaching physical education in kindergartens, indicating that the majority of teachers did not report significant barriers, despite students' expectations for Physical Education classes to resemble weekend sports. Additional challenges mentioned by teachers include limited event space, safety concerns in outdoor activities, material and staff support issues, security, and various constraints related to time, weather, and parental involvement. In Table 3b, one-sample t-tests





confirm significant differences among teachers' responses, highlighting that curriculum overload, time constraints, and busy classroom schedules pose considerable challenges to delivering Physical Education. However, the expectation of students for Physical Education classes to mirror weekend sports was not considered a significant barrier. Thus, according to teachers, there are notable barriers to teaching physical education in kindergartens, emphasizing the need to address these obstacles in the education system.

Table 4a: Perception Engagement of Teachers on How to Improve Physical Education among Kindergartens

Variable	Mean	Std. Err.	[95% Conf. Interval]	
All primary schools should have access to a trained Physical Education teacher on staff	2.953846	.0262273	2.901451	3.006241
I believe external programs assist schools in delivering a Physical Education program	2.738462	.0591483	2.620299	2.856624
I would complete in-service training in Physical Education if my school organized it as part of the required professional development days	2.707692	.0647595	2.57832	2.837064

Table 4b: One-Sample Z-test for testing whether there is a significant difference among the various responses on Perception Engagement of Teachers on how to Improve Physical Education among Kindergartens

z – core on all primary schools should have access to a trained Physical Education teacher on staff		
z = 17.3044		
Pr(Z < z) = 1.0000	Pr(Z > z) = 0.0000	Pr(Z > z) = 0.0000
z – core on I believe external programs assist schools in delivering a Physical Education program		
z = 4.0316		
Pr(Z < z) = 0.9999	Pr(Z > z) = 0.0001	Pr(Z > z) = 0.0001
z – core on I would complete in-service training in Physical Education if my school organized it as part of the required professional development days		
z = 3.2071		
Pr(Z < z) = 0.9990	Pr(Z > z) = 0.0021	Pr(Z > z) = 0.0010

Source: Author's Computation

Table 4a presents teachers' perceptions regarding the improvement of Physical Education in kindergartens, with mean scores of 3, 2.7, and 2.7 for responses to three questions, closely aligning with a score of 3, indicating majority agreement with these statements and confirming the findings in a table. In Table 4b, one-sample t-tests reveal significant differences at the 1% level for all three variables, verifying substantial distinctions in teachers' perspectives on enhancing Physical Education in kindergartens. Furthermore, teachers' suggestions for improvement encompass reducing administrative tasks, providing more child-focused time, encouraging increased participation in sports activities, allocating additional time for physical exercise, involving parents, considering Physical Education as homework when necessary, and collectively enhancing physical fitness.





Table 5a: Perception Engagement of Parents on the Role / Importance of Physical Education in Kindergartens' Overall Physical and Mental Development

Variable	Mean	Std. Err.	[95% Conf. Interval]	
I believe Physical Education in primary school teaches children resilience, teamwork, and social skills	2.88	.0230359	2.834574	2.925426
I think a child's physical skills are as important to develop as academic skills	2.995	.005	2.98514	3.00486
I want my child to develop mental skills at an early age so they can reach their full potential	2.58	.042745	2.495709	2.664291
I expect the primary school to look after my child's physical development.	2.975	.0110674	2.953176	2.996824
In establishing physical activity habits in children parents play a more important role than schools	2.565	.0428727	2.480457	2.649543
The amount of physical activity a child has each day is heavily influenced by the school environment	2.57	.0439906	2.483252	2.656748
A positive attitude toward physical education in kindergarten school leads to physically active adults	2.74	.0356138	2.669771	2.810229

Table 5b: One-Sample Z-test for testing whether there is a significant difference among the various responses on the Perception Engagement of Parents on the Role / Importance of Physical Education in Kindergartens' Overall Physical and Mental Development

z – core on I believe Physical Education in primary school teaches children resilience, teamwork work, and social skills			
z = 16.4960			
Pr(Z < z) = 1.0000	Pr(Z > z) = 0.0000	Pr(Z > z) = 0.0000	
z – core on I think a child’s physical skills are as important to develop as academic skills			
z = 99.0000			
Pr(Z < z) = 1.0000	Pr(Z > z) = 0.0000	Pr(Z > z) = 0.0000	
z – core on I want my child to develop mental skills at an early age so they can reach their full potential			
z = 1.8716			
Pr(Z < z) = 0.9686	Pr(Z > z) = 0.0627	Pr(Z > z) = 0.0314	
z – core on I expect the primary school to look after my child’s physical development.			
z = 42.9188			
Pr(Z < z) = 1.0000	Pr(Z > z) = 0.0000	Pr(Z > z) = 0.0000	
z – core on In establishing physical activity habits in children parents play a more important role than schools			
z = 1.5161			
Pr(Z < z) = 0.9345	Pr(Z > z) = 0.1311	Pr(Z > z) = 0.0655	
z – core on the amount of physical activity a child has each day is heavily influenced by the school environment			
z = 1.5912			





z – core on I believe Physical Education in primary school teaches children resilience, teamwork work, and social skills

$\Pr(Z < z) = 0.9434$ $\Pr(|Z| > |z|) = 0.1131$ $\Pr(Z > z) = 0.0566$

z – core on a positive attitude toward physical education in kindergarten school leads to physically active adults

$z = 6.7390$
 $\Pr(Z < z) = 1.0000$ $\Pr(|Z| > |z|) = 0.0000$ $\Pr(Z > z) = 0.0000$

Source: Author's Computation

Table 5a presents parents' perceptions of physical education's role in kindergarteners' overall physical and mental development, with mean scores indicating that the majority see it as significantly beneficial. However, when parents were asked about additional roles or the importance of Physical Education, they emphasized the need to strengthen it, learn from European early childhood education, consider the natural environment, and recognize the influence of children's peers on developing sports habits, as well as the importance of collective student habits, expanding social clubs, and cultivating interests. In Table 5b, one-sample t-tests confirm significant differences at various levels for all seven variables, indicating substantial distinctions in parents' views. This affirms that all seven aspects assessed are significant in the eyes of parents concerning the role and importance of physical education in kindergarteners' overall physical and mental development.

Table 6a: Perception Engagement of Parents on the Barriers to Teaching Physical Education among Kindergartens

Variable	Mean	Std. Err.	[95% Conf. Interval]
I believe parents do not focus on Physical Education as a priority area	1.95	.0565996	1.838388 2.061612
I think the curriculum is overcrowded and teachers cannot give enough time to Physical Education	2.14	.0553835	2.030786 2.249214
I believe my school prioritizes special programs such as band and music over sporting activities	1.595	.0486488	1.499067 1.690933
I don't think my school has enough money to provide a sufficient supply of sporting equipment	1.605	.0490603	1.508255 1.701745
My child often tells me they miss out on Physical Education each week	1.545	.049009	1.448356 1.641644

Table 6b: One-Sample Z-test for testing whether there is a significance difference among the various responses on Perception Engagement of Parents on the Barriers to Teaching Physical Education among Kindergartens

z – core on the curriculum is overburdened, and I am unable to devote the necessary time to Physical Education each week

$z = -9.7174$
 $\Pr(Z < z) = 0.0000$ $\Pr(|Z| > |z|) = 0.0000$ $\Pr(Z > z) = 1.0000$

z – core on busy classroom schedules force me to miss a Physical Education class for the week
 $z = -6.5001$



$\Pr(Z < z) = 0.0000$	$\Pr(Z > z) = 0.0000$	$\Pr(Z > z) = 1.0000$
z – core on outside activities with the children can be more difficult and require more of my attention		
z = -18.6027		
$\Pr(Z < z) = 0.0000$	$\Pr(Z > z) = 0.0000$	$\Pr(Z > z) = 1.0000$
z – core on students at my school expect Physical Education classes to run in the same manner as their weekend sport		
z = -18.2429		
$\Pr(Z < z) = 0.0000$	$\Pr(Z > z) = 0.0000$	$\Pr(Z > z) = 1.0000$
z – core on the curriculum is overburdened, and I am unable to devote the necessary time to Physical Education each week		
z = -19.4862		
$\Pr(Z < z) = 0.0000$	$\Pr(Z > z) = 0.0000$	$\Pr(Z > z) = 1.0000$

Source: Author's Computation

Table 6a illustrates parents' perceptions of barriers to teaching physical education in kindergartens, showing that, for the most part, parents disagreed with statements reflecting potential obstacles. The only exception was their neutral stance on the overcrowded curriculum. Overall, parents did not perceive significant barriers to the teaching of physical education in kindergartens, validating these findings in Table 6a. However, Table 6b's one-sample t-tests affirmed that parents' mean scores for responses to five questions hovered around 2, indicating that they did not strongly perceive barriers, even with assurances of anonymity. Furthermore, parents' comments shed light on potential obstacles, which ranged from safety concerns restricting children's physical activities to academic pressures and the impact of the exam-oriented education system. These insights provide a comprehensive perspective on the challenges faced in delivering physical education in kindergartens, highlighting areas where improvement may be needed.

Table 7a: Perception Engagement of Parents on How to Improve Physical Education among Kindergartens

Variable	Mean	Std. Err.	[95% Conf. Interval]	
All primary schools should have access to a dedicated Physical Education teacher on staff	2.9	.0224168	2.855795	2.944205
Physical activity should be included on homework sheets each week to ensure children are active	2.745	.0375088	2.671034	2.818966
Parents should take an active role in providing physical activity opportunities for their child	2.925	.0186713	2.888181	2.961819
Teachers should undertake professional development in Physical Education so they can assist students in developing skills and enjoying physical activity	2.86	.0245973	2.811495	2.908505





Table 7b: One-Sample Z-test for testing whether there is a significant difference among the various responses on Perception Engagement of Parents on how to Improve Physical Education among Kindergartens

z – core on all primary schools should have access to a dedicated Physical Education teacher on staff		
z = 17.8438		
Pr(Z < z) = 1.0000	Pr(Z > z) = 0.0000	Pr(Z > z) = 0.0000
z – core on physical activity should be included on homework sheets each week to ensure children are being active		
z = 6.5318		
Pr(Z < z) = 1.0000	Pr(Z > z) = 0.0000	Pr(Z > z) = 0.0000
z – core on parents should take an active role in providing physical activity opportunities for their child		
z = 22.7622		
Pr(Z < z) = 1.0000	Pr(Z > z) = 0.0000	Pr(Z > z) = 0.0000
z – core on teachers should undertake professional development in Physical Education so they can assist students in developing skills and enjoying physical activity		
z = 14.6358		
Pr(Z < z) = 1.0000	Pr(Z > z) = 0.0000	Pr(Z > z) = 0.0000

Source: Author's Computation

Table 7a presents parents' perceptions on ways to improve Physical Education in kindergartens, with mean scores of 2.9, 2.7, 2.9, and 2.9 for responses to four questions, closely approximating a score of 3. This indicates that the majority of parents agreed with these statements, corroborating the findings. In Table 7b, one-sample t-tests were conducted to evaluate the significance of differences among parents' responses regarding improving Physical Education in kindergartens. The t-statistics for all four variables were substantial, ranging from 6.5318 to 22.7622, with p-values of 0.0000 for each, confirming significant differences. This validates the notion that there is a significant variance in parents' perceptions concerning ways to enhance Physical Education in kindergartens, aligning with the results from Table 7a. Additionally, parents suggested several ways to improve Physical Education, including maintaining good exercise habits in elementary school, providing specialized physical education counselors, increasing awareness of sports' inherent benefits, offering more physical fitness and coordination training for children, promoting interest in physical education, organizing outdoor sports activities, improving school interest and professional education, enhancing campus sports facilities systematically and professionally, and creating more opportunities and environments for children to engage in sports activities, fostering their holistic physical and intellectual development.



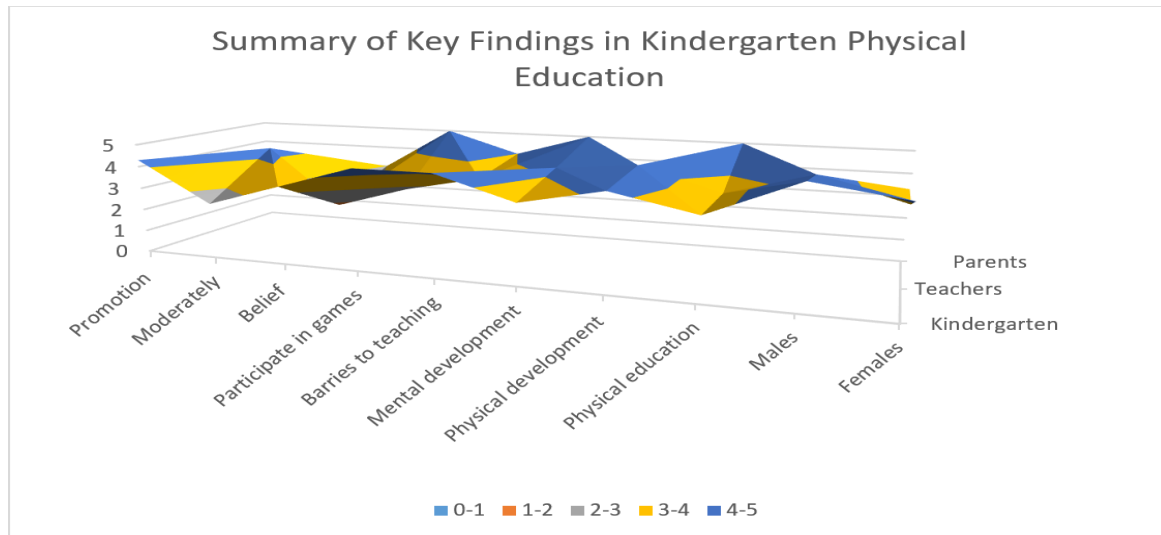


Figure: 2 Summary of Key Findings in Kindergarten Physical Education Engagement

Figure 2 summarizes the study's main findings on Kindergarten Physical Education Engagement. It reveals that kindergartens show moderate engagement, influenced by gender. Teachers play a vital role in promoting physical and mental development. Parents also value this, but face barriers such as safety concerns and academic pressure. Kindergartens express enthusiasm for sports games, but face challenges like limited time and venue restrictions, impacting their participation.

Discussion

The findings of this study that kindergartens have moderate perception, attitude, and reality toward physical education, and that of males is higher than that of females. Ridgers et al. (2007a) in the United Kingdom viewed that the likely reason could be that individuals with high Fear of Negative Evaluation (FNE) behave in a way to avoid being evaluated negatively, that some children seek feedback from others, that positive encouraging feedback may foster feelings of competence in both boys and girls and that positive encouraging feedback may reduce girls' social anxiety. Moreover, in the same vein, Spencer-Cavalliere & Rintoul (2012) viewed that the children's perception engagement is influenced by their level of control, meaning the importance of skill and choice; lower skill levels associated with embarrassment; lack of meaning in Physical Education, i.e., not recognizing the learning outcomes; social isolation due to a lack of skill and not being picked for teams; and researchers believe attachment, commitment, involvement, and belief in Physical Education leads to alienation. This finding is supported by Lu et al. (2017) who examined the factors that influence physical activity among Chinese children and teenagers and viewed that there was little physical activity among the children and again boys were consistently more active than girls. Furthermore, the teachers' perception of engagement toward physical education about the development effect of kindergartens' participation in physical education reveals that physical education is moderately promoting the kindergartens' overall physical and mental development. This vindicates the findings of the study concerning the kindergartens' perception, attitude, and reality toward physical education. This issue of teachers founding teachers' perception engagement of being moderate could be attributed to the reasons given by Morgan and Hansen (2007) in Australia who discovered that teachers did not properly plan, implement, assess, report, or evaluate physical education programs. In addition, Graham (2008) in the USA viewed that teachers could see physical education as an opportunity for a break, planning time, or to let children let off steam; hence, this could result in poor physical education. Additionally, a case



study of Kombaniya Primary School, Mansa District by Shimishi & Ndhlovu (2015) found that despite physical education being a required subject in schools, the study indicated that teachers had a poor opinion of it. The subject was disregarded, denigrated, and seen as free time for students to play and enjoy themselves. Moreover, the parents' perception of engagement toward physical education about the development effect of kindergartens' participation in physical education reveals that physical education promotes the kindergartens' overall physical and mental development. This finding is stronger than that of teachers who feel it to be moderate toward the development of promoting the kindergartens' overall physical and mental development. This is likely because parents could have more understanding of the impact been they have more time to spend with the children than the teachers. Though indirect, this finding is in line with that of Bois et al. (2005) that mothers' beliefs about their child's competence had an indirect impact on their child's physical activity by influencing their perception of competence, which in turn affected their level of involvement in physical activity; Sultana & Haque (2019) in China that preschool education is important as this period of infancy is vital for learning and development.

Conclusion

This empirical study investigates the perceptions and engagement of kindergarteners, teachers, and parents regarding physical education in Xi'an, China, using a sample of 201 kindergartens, 200 parents, and 65 kindergarten instructors. The research highlights that male kindergarteners exhibit higher engagement in physical education than females, with the discipline moderately enhancing their physical and mental development. Barriers to teaching physical education include limited space, security concerns, equipment issues, and parents' perceived lack of sports proficiency. Recommendations to improve physical education encompass reducing administrative tasks, allocating more time for physical activities, engaging parents, and enhancing physical fitness collaboratively. The results offer valuable insights for curriculum designers, teachers, and parents involved in children's sports activities, aiming to enhance physical education programs and the holistic development of kindergarten students.

Recommendation

Policy and practice recommendation

This study recommends a multifaceted approach to enhance the physical and mental development of kindergarten children through physical education. The suggestions include the introduction of dedicated Physical Education teachers or staff, incorporating regular physical activity into homework, promoting parental involvement in providing physical activities, offering professional development for teachers in Physical Education, and implementing external programs. Additionally, the study advocates for in-service training for teachers, reducing administrative burdens, and increasing opportunities for children and teachers to participate in various sports activities. It also emphasizes the importance of improving campus sports infrastructure and fostering an interest in sports education. Responding to specific requests, the study suggests introducing sports teams and competitions at different levels, establishing nearby sports venues, and encouraging parent-child participation in sports. Furthermore, it underscores the need for school support for children's sports, community organizations, and increased public funding and policy support to develop sports stars and instill a lifelong commitment to sports. These recommendations collectively aim to create a well-rounded approach to kindergarten children's physical and mental development.

Further research recommendation

The research is limited in scope, focusing solely on Xi'an, Shanxi Province, China, which may limit the generalizability of the findings. Additionally, the study is constrained by the Covid-19 pandemic's impact on the research timeline. Future studies could consider expanding the scope to encompass the entire province or the country, allowing for a broader perspective. Furthermore, investigating the influence of parental physical activity on their children's physical and mental development, as well as exploring





correlations between parental education, family socioeconomic status, and children's perceptions, attitudes, and realities concerning physical education, could be valuable avenues for further research.

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