



Research on the Current Situation of the Utilization of Physical Education Curriculum Resources in Kindergartens: Taking Four Kinder gardens in X District of Beijing as Examples

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Abstract

People's awareness of children's health and their conception of early childhood education have both improved steadily as a result of the advancement of my country's kindergarten physical education curriculum reform and the adoption of the "Guidelines for the Learning and Development of Children Aged 3-6" on the basis of national fitness. A key component of implementing kindergarten curriculum effectively is making use of the resources for the physical education curriculum. This study conducts a thorough investigation and analysis of the present state of the physical education curriculum resource utilisation in four kindergartens in Beijing's X District using the field research technique, literature method, questionnaire method, and interview method. Following a thorough examination and analysis of the state of use for the three primary physical education curriculum resources for kindergartens, sports equipment resources, and the benefits and drawbacks of using these resources, the following conclusions are made: 1. In terms of sports human resources: In the four kindergartens in X District, Beijing, except for the childcare workers, the in-service teachers are all involved in organizing sports activities, and most of them are women. 2. In terms of content resources of physical education courses: Kindergarten reference materials are rich in types, and teachers organize various activities. 3. In terms of sports equipment resources: Kinds of large-scale sports equipment in kindergartens are limited by space, but there are many types of small and medium-sized sports equipment. Based on the findings, the following recommendations are made: Increase the training of kindergarten physical education curriculum resources to improve resource utilization and richness; introduce male teachers or teachers with a professional physical education to create diversified kindergarten physical education human resources; improve the suitability and safety of teachers' use of sports equipment resources.

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1. Introduction

Early childhood physical education is the hope of the future of the country. In the early physical education of children, kindergarten plays an indispensable role, its quantity and quality are directly related to the development of early physical education of children ^[1]. How to use PE curriculum resources effectively is the key and difficult point of our kindergarten PE education reform ^[2].

This paper investigates the current situation of the utilization of PE curriculum resources in kindergartens, analyzes the causes of the problems, puts forward scientific and rational optimization ideas, and finally realizes the goal of building a scientific teaching model of PE curriculum resources in kindergartens, providing necessary references for improving the innovation ability and use efficiency of PE curriculum resources and promoting the prosperity and development of PE activities in kindergartens.

1.1 Research design

This study adopts convenient sampling to select four kindergartens in District X of Beijing as the research objects. The general situation of the four kindergartens is shown in Table 1. This paper mainly studies the selection of teachers and parents by PE human resources. The situation of teachers and teaching materials in PE curriculum content resources; Sports equipment resources Sports equipment situation ^[3].

Table 1: Overview of four kindergartens in District X of Beijing

B Kindergarten was rated as a Class I kindergarten in Beijing in 1991, and became the first municipal demonstration park in Beijing in June 2001.	L Kindergarten is a Class I kindergarten in Beijing, Beijing Demonstration Park, Beijing Early Education Base, Air Force Demonstration Kindergarten, and X Zone Demonstration Park.
D Kindergarten is one of the earliest kindergartens in China. The founder of D kindergarten is the famous preschool educator Mr. Zhang Ximen. D Kindergarten is now the Beijing First-class Kindergarten Institute, the Beijing Health Care Model Park, and the Beijing Demonstration Park.	H Kindergarten was completed in 2022, and is affiliated to the former Elementary school No. 6 Elementary School of Neibu Sanqi, which was founded in 1904. In 1906, the school was converted into the Beiyang Government No. 2 Primary School and was one of the earliest public primary schools.

2. Research method

2.1. Documentary Analysis

A large number of relevant literatures and books on kindergarten physical education curriculum resources have been searched and translated in the past ten years to understand the current situation, problems and experience of the utilization of kindergarten physical education curriculum resources in different cities in China, as well as theoretical analysis and research of domestic and foreign experts and scholars. Based on the experience of predecessors, the research direction and ideas have been clarified and the theoretical research foundation has been laid. Have a systematic understanding of the reality and its development, and analyze and summarize it ^[3].

2.2. Interview method

A single kindergarten teacher and teaching director were chosen for each of the four kindergartens, resulting in a total of four kindergarten teachers and four teaching directors from various kindergartens. Consult the instructors and teaching director of the kindergarten to get insight into the existing strategies for utilising content resources, people resources, and equipment resources in the physical education curriculum of the kindergarten. Additionally, analyse the benefits, drawbacks, and challenges associated with the implementation process ^[4].

2.3. Questionnaire

The data analysis and statistical analysis were carried out on a total of 157 teachers who were chosen from three different age classes in order to get an understanding of the existing scenario regarding the utilisation of physical education curricular materials by kindergarten teachers. The total number of questionnaires that were sent was 157, out of which 139 were recovered, two questionnaires that were found to be invalid were eliminated, and 137 valid questionnaires were left. This represents an effective recovery rate of 87.3%.

Parents of four kindergartens in X District of Beijing were investigated by self-made questionnaire "Kindergarten Parents Sports Hobby Questionnaire". A total of 361 parents of three age classes were selected to understand whether kindergarten parents have sports hobbies, and data analysis and statistics were carried out. A total of 361 questionnaires

were issued, 361 were recovered, 0 invalid questionnaires were excluded, and 361 valid questionnaires remained, with an effective recovery rate of 100%.

2.4. Field survey method

Using four kindergartens in Beijing's X District as research subjects, a field investigation was carried out on the utilisation of sports human resources, the utilisation of sports curriculum content resources, the utilisation of sports equipment resources and the types of sports equipment resources, and so on. Additionally, first-hand information regarding the utilisation of sports curriculum resources in four kindergartens in Beijing's X District was summarised and the information was organised.



Fig 1: Sports equipment resources (balls, hula hoops) in B kindergartens

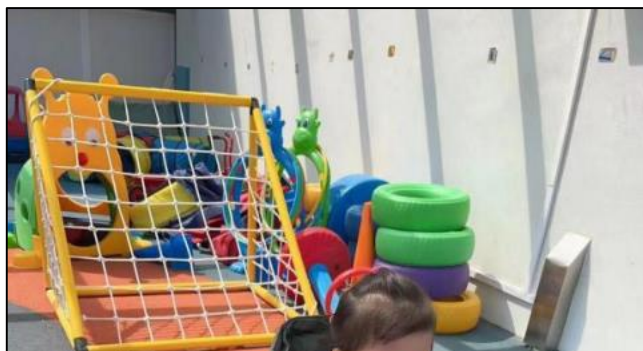


Fig 2: Sports equipment resources for H kindergartens (small and medium-sized)



Fig 3: Large-scale sports equipment resources in D kindergarten (climbing wall)



Fig 4: Large sports equipment for L kindergarten (combined climbing frame)

3. Research results and analysis

3.1 Analysis of the utilization of kindergarten physical education human resources

3.1.1 Analysis on the utilization of kindergarten teachers' resources

1. Current situation of kindergarten teacher resources

According to the field investigation of four kindergartens in X District of Beijing, the number of teachers per class in these four kindergartens is 3 to 4, and the basic structure is one

main class teacher, one class teacher and one nursery worker. The survey found that there were no full-time sports teachers in all classes of the four kindergartens at present, and the average number of graduated teachers in sports colleges was 0.18 per class. Generally speaking, the organization of sports activities was generally undertaken by the main class teachers, class teachers and practice teachers in turn. See Table 2 for details.

Table 2: Distribution of kindergarten teachers per class

Option	Number of teachers	Number of full-time PE teachers	Number of part-time physical education teachers	Number of teachers graduated from physical education institutions
Number/Class	3.65	0	2.35	0.18

Based on a random sample of 137 instructors from four kindergartens in X District of Beijing, Table 3 indicates that the percentage of female teachers exceeds that of male teachers. Based on the data shown in Table 3, the age distribution of teachers reveals that those aged 26 and above constitute the overwhelming majority, representing 77.4% of the total surveyed instructors. Based on the data presented in

Table 4, the instructional age of instructors is mostly over 25 years old. Based on the data shown in Table 5, 101 instructors, which represents 73.7% of the total questioned, have completed pre-school education majors. Additionally, 125 teachers, accounting for 91.3%, have obtained bachelor's or master's degrees or higher credentials ^[5].

Table 3: Gender and age structure of teachers

Options	Female	Male	21-25 years old	26-30 years old	Over 30 years old
Number of people	107	30	31	67	39
Percent	78.1	21.9	22.6	48.9	28.5

Table 4: Teachers' teaching age distribution table

Options	0-5 Year	6-10 Year	10 years and above
Number of people	33	67	37
Percent	24.1	48.9	27

Table 5: Structure of teacher's subject and education background

Options	Preschool education	Other normal classes	Non-normal class	Junior college	Undergraduate course	Postgraduate and above
Number of people	101	18	13	12	102	23
Percent	73.7	13.1	0.09	8	74.5	16.8

2. Measures for kindergartens to utilize their own teachers' resources

Organize sports activities and seminars every week

In order to further improve the quality of sports activities organized by our teachers, four kindergartens in X District of Beijing organize sports activities and seminars every week.

Encourage and support teachers to carry out research on children's physical activity.

Through field visits and interviews with teachers, kindergartens often encourage teachers to develop sports activities ^[6].

Strengthen the recruitment of physical education graduate teachers

Increasing the investment of PE graduate teacher resources is an effective measure to utilize PE curriculum resources.

Table 6: Teachers' attitude towards the provision of PE professional and full-time teachers

	Options	frequency	占比
It is necessary to equip PE teachers	Necessary	49	35.80%
	General	32	23.40%
	Unnecessary	56	40.90%
It is necessary to equip sports full-time teachers	Necessary	86	62.80%
	General	49	35.80%
	Unnecessary	2	0.02%

(3) Current situation analysis on the utilization of kindergarten teachers' resources

Based on the aforementioned statistics, our kindergarten has made full use of its physical education teacher resources and has seen some success. However, there are still certain areas that need improvement.

Rich teaching experience, rich credentials, related majors, and good academic qualifications characterise the four kindergarten instructors in Beijing's X District.

The observation and discussion of sports activities regularly organized by kindergartens are of great help to the improvement of teachers' self-ability.

All the four kindergartens place great emphasis on teachers' training in knowledge related to sports activities and on promoting the development of teachers' professional quality, which is conducive to promoting the development of teachers' ability to use physical education curriculum resources ^[7].

3.1.2. Analysis of resource utilization of kindergarten parents

(1) Current situation of kindergarten parent resources

As a result of the questionnaire survey that was administered to the parents of four kindergartens in the X District of Beijing, it was discovered that 36 parents reported that they do not have any sports hobbies, which accounts for 10% of the total number of respondents. On the other hand, 325 parents reported that they do have sports hobbies, which accounts for 90% of the total participants.

Table 7: Number of parents who are interested in sports

Options	Have a hobby for sports	No sports interests
Number of people	325	36
Percent	90	10

(1) Measures for kindergartens to use parents' resources to carry out sports activities

Carry out sports parent-child activities

The four kindergartens in District X of Beijing will carry out parent-child sports activities, among which the more common form is parent-child sports meeting.

Invite parents to participate in or organize sports activities

In kindergarten B, L and D, the teachers of several classes invited several parents to the kindergarten to organize a series of sports activities for their children. For example, a teacher of a small class in B kindergarten once invited a parent who loved running marathons to organize children to pull their tails. After the activity, she also held a science popularization lecture on marathon sports knowledge for children. As a soldier, the parents of the kindergarten organized a game activity of "Crossing the thorn bush" for the children of the big class ^[8].

(3) Encourage parents to lead their children to outdoor activities and share on weekends or holidays

The teachers of the four kindergartens in District X of Beijing all said that they would encourage parents to lead their children to outdoor activities during weekends or holidays, among which the teachers of Kindergarten H and Kindergarten L would ask parents to record a video of outdoor activities for their children during the outing and display it collectively during the school day. Among the more common outdoor activities in person include going to the park, climbing the Great Wall, mountain climbing, cycling, swimming, kayaking and so on ^[9].

(4) Current situation analysis of kindergarten parents' resource utilization

Kindergarten parent resources play a very important role in supporting the use of PE curriculum resources. The limited number of sports activities that can be held in kindergartens cannot really lead children to carry out natural sports activities outdoors, so the use of kindergarten parent resources becomes more important.

The kindergarten pays attention to the use of parents' sports resources. As can be seen from Table 7, the four kindergartens in X District of Beijing often invite parents to organize or participate in sports activities, accounting for 86.8% of the total number of respondents. At the same time, the parents of the four kindergartens often participate in sports activities in daily life. During the actual visit and survey, the teachers of the four kindergartens said that parents often take their children out for exercise after class. Such as climbing, swimming, boating, going to the park and so on.

Table 8: Frequency of inviting parents to organize or participate in sports activities

Options	Frequent	Relatively Common	Occasional
Number of people	34	98	5
Percent	24.8	71.5	0.04

Teachers have a full understanding of parents' resources, which is conducive to the full utilization of parents' resources. "We will communicate with each parent on the phone every week. During the phone communication, we will not only summarize the situation of the child during the week, but also further understand the personality and hobbies of the parents, and make statistical tables for other teachers' reference." (H Kindergarten teacher) "Every day after school, our main class teacher will have one-on-one offline communication with some parents. In this process, parents' sports hobbies, including personality strengths, will be understood and counted. We also use some language activities to let children introduce their parents to others. In the process, we also have a better understanding of the hobbies and strengths of the parents." (L kindergarten teachers) "We will have a certain understanding of parents before their children enter school, such as parents' interests, hobbies or specialties, etc., which are very helpful for us to use parents' resources, and at the same time can be more handy in the process of co-parenting at home." (B Kindergarten teacher) "Before the children enter the kindergarten, we will have some understanding of the parents, such as family environment, occupation, hobbies, and even what their grandparents like to do, because not knowing the parents or grandparents of the children is very important for the development of kindergarten activities." (D Kindergarten Teacher) From the above interviews with the four teachers, we can see that the teachers have a deep understanding of the interests, hobbies and sports strengths of the parents of the children in the class, and they regularly make statistics on them and record them. This is a great help in making full use of parents' resources ^[10].

3.1.3. Utilization of other social personnel resources in kindergartens

(1) Current situation of other social personnel resources in kindergartens

By inviting other social personnel into the kindergarten to organize sports activities, the kindergarten can not only enrich the physical education curriculum resources of the kindergarten, but also enhance the children's interest in sports activities and bring fresh feelings to the children. Among them, L Kindergarten belongs to the Air Force Logistics Department of the Beijing Military Region and maintains a close cooperative relationship with the military ^[11]. H Kindergarten, as an affiliated kindergarten of primary school, has a close cooperative relationship with primary school. B Kindergarten is also open to the community on weekends, in order to promote the integration of the home community.

(2) Measures for kindergartens to use other social personnel resources to carry out sports activities

Invite national sports inheritors from social personnel to the park for the organization and display of sports activities. The teachers of four kindergartens in X District of Beijing will invite ethnic sports inheritors from the public to display and organize sports activities. For example, B kindergarten and L kindergarten organized diabolo playing activities, D

kindergarten organized bamboo pole jumping activities, H kindergarten organized wrestling activities.

Invite members of the co-construction units of the community to organize activities in the park. The four kindergartens in X District of Beijing will invite staff from co-construction units to organize activities in the kindergarten. For example, L Kindergarten, as a kindergarten of the Air Force Logistics Department of the Beijing Military Region, maintains close contact and cooperation with the army. They often organize activities combined with the army and invite soldiers in the army to the kindergarten to organize sports activities for children, such as military training activities for middle and senior classes. As an affiliated kindergarten of primary school, H Kindergarten often invites physical education teachers from primary school to participate in sports activities for children ^[12].

Invite sports talents from social personnel to enter the park to carry out activities. For example, H Kindergarten invites taekwondo instructors to give the children taekwondo experience lessons; L The kindergarten invites the sports college basketball special students to have a shooting game with the children; B Kindergarten invites figure skating champions to organize figure skating imitation activities.

(2) Current situation analysis of the utilization of other social personnel resources in kindergartens

The kindergarten attaches importance to the utilization of other social personnel resources. It can be seen from Table 8 that the frequency of sports activities organized by social sports personnel and non-genetic inheritors in the four kindergartens is relatively high. Nine teachers said that kindergartens often invite other social personnel to participate in sports activities in kindergartens, and 89 teachers said that they often invite other social personnel to organize sports activities in kindergartens.

Table 9: Frequency of sports activities organized by community sports personnel and non-genetic inheritors

Options	Frequently	Normal	Occasional
Number of people	9	89	39
Percent	6.6	65	28.5

The four kindergartens in X District of Beijing are rich in other social personnel resources. The four kindergartens in X District of Beijing have maintained close cooperation and contact with different social relations. At the same time, due to the superior geographical conditions of the four kindergartens and the human resources of the surrounding kindergartens, military human resources, community human resources, etc., it is enough to see the richness of other social personnel resources of the four kindergartens in X District of Beijing.

3.2 Analysis of the utilization of kindergarten PE curriculum content resources

This paper makes an in-depth analysis of the utilization status of PE curriculum content resources, mainly from two perspectives: one is the present situation of reference book resources required by teachers to carry out sports activities, the other is the exploration of the utilization status of folk sports game resources.

3.2.1 Utilization of reference book resources for sports activities in kindergartens

(1) Current situation of reference book resources for kindergarten sports activities

Through field investigation and questionnaire, it is found that the reference books for sports activities in the four kindergartens in District X of Beijing are mainly the reference books for sports activities written by the kindergartens themselves, the reference books for sports

activities purchased by the kindergartens from different publishing houses or the self-compiled teaching materials of kindergartens, such as the children's self-development course written by Beihai Kindergarten. Some kindergarten teachers will also refer to sports game activities videos on social media and adapt them according to children's age characteristics and interests. Among them, 137 people were surveyed in this study, and the top 50% of recommended books are as follows:

Table 10: Teacher recommended reference books

Book title	Recommendation times
<Research on the Practice of Kindergarten-based Curriculum for Children's Self-Development in Beihai Kindergarten in Beijing>	126
<99 Cases of Excellent Sports activity Design in Kindergarten>	126
<Kindergarten Sunshine Sports Innovative Game Activities>	119
<A Guide to Learning and Development for Children aged 3-6>	111
<Kindergarten Outdoor Creative Play and Learning>	109
<Kindergarten Sports Activity Design>	93
<Kindergarten Physical Activity Design and Teaching Guidance>	81
<Kindergarten Sports Activity Design and Guidance>	67
<Playing and Learning of Folk Games>	37

(2) Measures for kindergartens to use reference book resources for sports activities

Activities in full accordance with the content of the book In the process of sports activities, a small part of teachers will choose to do activities in full accordance with the content of the book. B kindergarten teacher said, "When we organize sports activities, we usually choose to directly use reference books, because this is a kindergarten curriculum designed by our kindergarten and has been written in detail according to the month and period."

Re-adapt the activities in the book according to children's age characteristics and venues. For most teachers, the activities in the book will be re-adapted according to children's age characteristics, venues, creativity of games and activity equipment. "Because our kindergarten does not have its own kindergarten curriculum now, we usually refer to other kindergartens' kindergarten curriculum or other books, but I always feel that their activity plan is not detailed enough, so we will adapt it according to the age characteristics of children." (H kindergarten teacher) "We generally refer to the sports activities in the book, and then adapt them according to some of the characteristics of children, or the venue, and also refer to some interesting game activities on the Internet, and then the two activities may be integrated together so that they feel hungry, children like to play more and are more creative." Because the Internet is still very developed, and the activities on it are also very rich." (D Kindergarten Teacher)

(3) Analysis of the current situation of kindergarten's utilization of reference book resources for sports activities

The four kindergartens in X District of Beijing have a wide variety of reference materials. In addition to the kindergarten curriculum developed by different kindergartens, they also refer to the Outline and Guide issued by the Education Commission and other reference books on folk games and innovative games. In addition, teachers are also very good at using other ways to search for available reference books on the Internet. (2) Teachers have the ability to use reference books rationally. On the whole, most kindergarten teachers can re-adapt and create reference books for sports activities according to the age characteristics of children^[13].

3.2.2. Utilization of folk sports game resources in kindergartens

(1) Current situation of using folk sports game resources in kindergartens

Through questionnaires, this study learned that the teachers of the four kindergartens had organized some folk sports games that children liked to play in nearly half a year, such as hopscotch, shuttlecock kicking, kite flying, eagle catching chicken, lion dance, hoop rolling, rope jumping, duck crossing, tail pulling, etc. Among them, 14 common folk sports games were selected in this study. The organization of the four kindergartens is shown in Table 10.

Table 11: Statistics of common folk sports games

Options	Hopscotch	Shuttlecock kicking	Fly a kite	Diabolo	Eagle catches chicken	Lion dance	Hoop rolling	Long rope skipping	Duck across the river	Pull sb. by the tail	cock fighting	Drop the handkerchief	Wooden game	Hide And Seek
B kindergarten	√	√	√	√	√	√	√	√	√	√		√	√	√
L kindergarten	√		√		√	√	√	√	√	√	√	√	√	
D kindergarten	√	√	√	√	√			√	√	√	√	√	√	√
H kindergarten	√	√			√	√	√	√	√	√	√	√	√	

(2) Measures for kindergartens to use folk sports game resources

Inviting folk sports game experts into the park to organize folk sports games. Every semester, the four kindergartens in

X District of Beijing basically invite folk sports game experts to organize and display folk sports game activities in the kindergartens, such as playing diabolo, rolling iron rings, flying kites and other common games.

Explore game activities of different nationalities in various ways such as social platforms and design sports game activities through adaptation. In the past teaching practice, teachers often obtain and explore traditional folk sports games through various channels, such as searching for sports games of different nationalities on the Internet, referring to folk sports games books, and combining their childhood life experience.

(3) Analysis of the current situation of using folk sports game resources in kindergartens

The kindergarten uses various kinds of folk sports games. On the whole, the four kindergartens in District X of Beijing make rich use of folk sports game resources. In addition, all the teachers mentioned in the interviews that kindergartens often invite folk sports inheritors to the kindergartens to organize exhibitions and activities, and teachers will adapt the folk sports games to better suit the age characteristics of children and attract their interest.

Teachers can make reasonable use of folk sports games according to children's age characteristics. Teachers can watch folk games of different nationalities on social platforms and change and design the games according to their own abilities, so that folk sports games can be more in line with the age characteristics and physical and mental development characteristics of children and teach students according to their aptitude.

3.3. Analysis of the utilization of kindergarten sports equipment resources

3.3.1 Current situation of kindergarten sports equipment resources

(1) Current Situation of types of sports equipment resources in kindergartens Through field investigation and collection and sorting of questionnaires, the types of large (fixed) sports equipment and small and medium-sized (mobile) sports equipment in four kindergartens in X District of Beijing are shown in Table 11 and 12.

Table 12: Types of large (fixed) sports equipment in kindergartens

Options	large slide	Miniature slide	Bridge swinging	Horizontal bar	Combined drill and crawl net	Pirate ship	Jungle gym	swing	Basketball stand	Children's swivel chair	Drill barrel	trampo line	Balan ce beam	Drawbridge
B kindergarten	√	√	√	√	√		√	√	√		√		√	√
L kindergarten	√	√	√		√		√	√	√		√		√	√
D kindergarten		√			√		√	√	√		√		√	√
H kindergarten		√							√		√		√	

Table 13: Types of small and medium-sized (mobile) sports equipment in kindergartens

Options	All kinds of ball games	racket	Jump rope	shuttlecock	Mini tricycle	Rope ladder	tyre	Hoop rolling	Skip a rubber band	Balanced board, balanced plate	Jumping box	Hula hoop	Cast net	Crochet ball	diabolo
B kindergarten	√	√	√	√	√	√	√	√					√	√	√
L kindergarten	√	√	√	√	√	√	√		√			√	√	√	√
D kindergarten		√		√	√	√	√					√	√	√	
H kindergarten	√	√	√		√		√					√	√	√	√

3.3.2 Current situation of kindergarten teachers' cognition on the safety of sports equipment resources

Aiming at the safety during the use of sports equipment, this study conducted an investigation on the safety of sports

equipment and the safety during the use of sports equipment in four kindergartens in X District of Beijing through interviews, questionnaires and field surveys. The investigation results are shown in Table 13.

Table 14: Causes of injury accidents

Options	Teachers do not cooperate well	Unscientific use of the site or unsuitable equipment	The content of the activity is unreasonable	Poorly organized teachers or unclear teaching methods
Number of people	98	63	54	17
Percent	71.5	46	39.4	12.4

In the process of organizing and carrying out sports activities, teachers generally believe that the causes of injury accidents in order from the largest to the smallest are: inadequate teacher cooperation, unscientific use of venues or inappropriate equipment, unreasonable activity content, unfavorable teacher organization or unclear teaching methods. In the process of ranking the six most injurious

actions in the use of outdoor physical activity materials, 69 teachers said they were most vulnerable to injury when using physical activity equipment for dodging activities. The second is the use of balance beam and other equipment for balance training, obstacle running, rotation, suspension and jumping, as shown in Table 14.

Table 15: The six most injury-prone movements in the operation and use of outdoor physical activity materials

Options	Dodge	Balance	Run	Rotate	Suspend	Jump
Number of people	69	58	49	44	42	39
Percent	49.6	41.7	35.7	32.1	30.7	28.5

Current situation of kindergarten teachers' ability and attitude to self-made sports equipment

By further exploring the ability and attitude of teachers to

make their own sports equipment, it is found that the main reason for teachers to make their own sports equipment is to enrich children's sports, and nearly 40% of teachers said that

the self-made sports equipment is due to the innovative development of kindergarten requirements. In the process of making self-made sports equipment, the teachers of the four kindergartens said that the most important factors were

reasonable selection of materials, scientific design, robustness and durability, and easy operation. Secondly, the production is simple and the gameplay is diverse. Beauty is the least important consideration. For details, see Table 15.

Table 16: Self-made sports equipment test scale of kindergarten

Title	Options	Number of people	Percent
1. The main reason for making sports materials	A supplement to the limitations of existing materials	9	6.6
	Enrich children's sports	75	5
	Kindergartens require innovative development	53	38.7
2. What should be considered as the key aspects of outdoor sports materials made by kindergartens? (multiple choices)	Rational selection of materials	135	98.5
	Design science	132	96.4
	Strong and durable	133	97.1
	Simple to make	67	48.9
	Easy to operate	93	67.9
	Variety of gameplay	66	48.2
	Beautiful and elegant	21	15.3
3. Whether you can make your own sports equipment	Yes	115	83.9
	No	22	16.1
4. Reasons affecting self-made sports equipment	Teachers don't have enough knowledge to make their own devices	22	16.1
	The use of homemade equipment is not good	48	35
	Worried about security risks	67	48.9

In addition, during the questionnaire survey, 115 teachers said that they would make their own sports equipment, accounting for 83.9% of the total number of respondents, and 22 said that they would not make their own sports equipment. Through the interview, it was found that these teachers were mainly nursery teachers and some trainee teachers.

Measures to use sports equipment resources in kindergartens
Play a variety of sports equipment: kindergarten teachers will jointly discuss and practice the play of a certain sports equipment. For example, L kindergarten not only allows children to climb forward in the game activities of the jungle gym, but also exercises children's motor coordination and climbing ability by letting them climb backwards, climb on the jungle gym and walk sideways on the side of the jungle gym.

Supplement the sports equipment resources of kindergartens through various channels: the four kindergartens in District X of Beijing will supplement the sports equipment resources of kindergartens through various channels, generally supplement the self-made sports equipment of kindergartens, and produce a variety of simple equipment on the basis of co-parenting at home. For example, Kindergarten B will use various waste cans to make flower piles and so on.

3.3.2. Analysis of the current situation of the utilization of sports equipment resources in kindergartens

(1) The types of large-scale sports equipment are limited by site factors, resulting in low abundance. Only Kindergarten B contains more than half of the types of large-scale sports equipment, while the other three kindergartens have no place to place large-scale sports equipment due to the space limitation of the other three kindergartens, and generally only contain small slides, composite climbing nets, basketball stands and balance beams.

(2) Various types of small and medium-sized sports equipment: balls, skipping rope, rackets, tires, mini tricycles,

shuttlecock, hula hoop, croaker ball and diabolo playing are basically included in each kindergarten. In addition, we should also strengthen the delivery of folk sports equipment such as rolling hoops, rubber bands, jumping boxes, etc.

(3) Teachers are not clear about the age corresponding to the use of equipment and do not give adequate guidance on the use of equipment: It can be seen from the six most vulnerable actions in the operation and use of outdoor sports activities materials that it is more vulnerable to injury in the use of small and medium-sized sports equipment, such as easy to fall or collide in the process of dodging with balls or sandbags, easy to fall in the use of iron rings, hand-pushed ducklings and other equipment for running activities, and easy to fall or trip in the process of obstacle jumping. Most of these problems arise from teachers' improper description of the use of sports equipment or their failure to select sports equipment according to the age characteristics of children^[14].
(4) There are loopholes in the cooperation of teachers: there are dead corners in the standing positions of main class teachers, assigned class teachers and nursing teachers, and they do not maintain triangular standing positions, which causes physical harm to children and most of them occur during the free activities of children.

(5) Teachers do not pay attention to children's individual differences in the selection of materials for collective activities and have a poor grasp of children's psychological safety. According to Table 16 and field survey results, this study found that teachers pay great attention to the physical safety of children in the process of supplying sports equipment, but their control of psychological safety is weak, mainly due to their weak awareness of psychological safety in sports activities and unclear concepts. At the same time, most teachers can provide sports equipment according to children's age characteristics, interests and movement development characteristics, but some teachers said that the order of children's movement development is not very clear.

Table 17: Present situation of sports equipment used by teachers

Title	Options	Number of people	Percent
1. How much attention you pay to the physiological safety of children in the process of equipment delivery	Attach great importance to	117	85.4
	More concerned	20	14.6
	Pay little attention	0	0
2. Influence of outdoor physical activity materials in kindergartens on children's physical activity development	Attach great importance to	78	56.9
	More concerned	58	42.3
	normal	1	0.7
	Less important	0	0
3. Whether it will regulate the physiological load of children's exercise through the delivery of materials	Yes	117	85.4
	occasional	20	14.6
	No	0	0
	Pay no attention to	0	0
4. In the process of equipment delivery, the degree of attention to the psychological needs of children	Attach great importance to	20	14.6
	More concerned	88	64.2
	Pay little attention	26	19
	Pay no attention to	3	2.2
5. Control the psychological safety of children in the process of placing outdoor sports materials	Very confident	4	2.9
	More certain	21	15.3
	Less sure	109	79.6
	Not sure	3	2.2
6. Is it ideal to control the challenge in the process of placing materials for outdoor sports activities	Very ideal	37	27
	Relatively ideal	98	71.5
	Less than ideal	2	1.5
	Unsatisfactory	0	0
7. Whether the operation of outdoor sports materials can be adjusted according to the age characteristics of children	Yes	135	98.5
	occasional	2	1.5
	No	0	0
8. Whether the experience of young children will affect your outdoor sports materials	Yes	131	95.6
	occasional	6	4.4
	No	0	0
9. In the process of outdoor sports materials delivery, whether to pay attention to individual differences to carry out hierarchical delivery	Yes	126	92
	occasional	11	8
	No	0	0
10. Whether children can voluntarily choose physical activity materials during free activity time	Absolutely possible	38	27.7
	controlled	99	72.3
	No	0	0

4. Discussion

4.1. Analysis of the utilization of physical education human resources in kindergartens

In Haidian District of Beijing, 87.5% of public kindergartens have PE teachers, and 50% have full-time teachers. This is slightly different from the current situation in the four kindergartens in X District of Beijing ^[15].

With the exception of the childcare staff, all in-service teachers at the four kindergartens in Beijing's X District are now active in planning sports events, and there aren't many PE grads. Furthermore, thirty professors are male, making up 21.9% of the total. These alterations show that the percentage of male instructors has grown and that the four kindergartens in Beijing's District X now give graduates majoring in physical education greater consideration.

4.2. Analysis of the utilization of kindergarten PE curriculum content resources

At present, the status quo of the four kindergartens in X District of Beijing is quite different. At present, the four kindergartens are rich in sports activities textbooks. Besides some extracurricular books, some kindergartens have created their own kindergarten sports activities textbooks through accumulation of experience. In addition, teachers are also good at using the Internet to enrich the form and content of sports activities by adapting sports activities on social media. In general, the four kindergartens in X District of Beijing are

rich in PE curriculum content resources and make good use of them ^[16].

4.3. Analysis of the utilization of sports equipment resources in kindergartens

The four kindergartens in X District of Beijing are limited by the space of sports activities, resulting in fewer types of large sports equipment, but the abundance of small and medium sports equipment is high ^[17].

5. Conclusion and Suggestions

5.1. Conclusion

Through questionnaire, interview and field investigation, the results show that the four kindergartens in X District of Beijing have a good utilization of PE curriculum resources:

(1) Sports human resources: In the four kindergartens in X District of Beijing, all the in-service teachers except the childcare staff participate in the organization of sports activities, and most of them are female, and there are few sports graduates. The teachers lack keen insight into outdoor sports activities, which has a certain impact on the effective use of sports equipment, the smooth development of activities and the safety of activities. The rich resources in the use of community resources, parents resources and other resources have brought great help to the richness of sports activities in kindergartens.

(2) In terms of PE curriculum content resources,

kindergartens have rich reference materials and diverse activities organized by teachers. At the same time, the utilization of folk sports game resources is good, and the adaptation is intentional and diverse, which is worth learning and learning from every kindergarten.

(3) Sports equipment resources: The types of large-scale sports equipment in kindergartens are limited by space, but the types of small and medium-sized sports equipment are abundant. Teachers have good ability to make their own sports equipment, but they are not good at rational use and delivery of sports equipment, lack awareness of children's psychological safety, and cannot reduce or improve the difficulty of sports equipment for different children according to their individual differences in collective activities.

5.2. Suggestions

(1) Strengthen the training of physical education curriculum resources in kindergartens to improve the utilization rate and variety of resources. Kindergartens should appropriately increase the professional training of kindergarten physical education curriculum resources, and improve the utilization and richness of resources by clarifying the content, classification and concept of resources^[18].

(2) Introduce male teachers or PE teachers to create diversified PE human resources in kindergartens. The state pays more attention to and propagandises the cause of early childhood physical education in terms of cultivating talents, and kindergartens should also actively publicize and recruit in major colleges and universities, especially sports colleges, to fundamentally solve the dilemma of the lack of male teachers in kindergartens and graduates from sports colleges and universities^[19].

(3) Improve the suitability and safety of teachers' utilization of sports equipment resources. It is recommended that kindergartens improve their training with regard to the utilisation of sports equipment. Additionally, it is proposed that providers of sports equipment be brought to the kindergarten in order to provide instructors with a comprehensive explanation of the utilisation of sports equipment as well as safety measures.

At the same time, the accuracy and safety of sports equipment resources should be evaluated regularly to urge teachers to teach according to their aptitude.

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