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The Current Status of Gross Motor Skills Among Children Aged 3-6 Years Old in Poverty-Stricken Areas Based on TGMD3

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Abstract. The deterioration of children's physical health has become a major public health issue of global concern. According to the "Report on the Nutrition and Chronic Disease Status of Chinese Residents" released by the National Health Commission in 2020, the overweight and obesity rate of urban and rural children in my country has reached 10%. By using the most advanced gross motor skill development tester (TGMD-3) to test the gross motor skills of 100 children from 5 kindergartens in Haiying Town, it was found that the development of gross movements was at a medium-low level, the displacement movement skills were at a medium level, and the object control skills were at a medium-low level. The development of children's movements such as "standing long jump", "single-handed racket hitting rebound ball", "kicking fixed ball", and "single-handed in-situ ball" needs attention and intervention.
This study analyzes the current status of the development of gross motor skills of children in Haiying Town, further explores the factors affecting the development of children's gross motor skills, and hopes to solve the problem of the level of gross motor skills and physical quality development of children in Haiying Town, improve the understanding and level of the importance of gross motor skills development of children in poor counties and towns, and contribute to the development of physical quality and sports for children in Haiying Town.

Keywords: Young children, Gross motor, Influencing factors, Intervention path

1. Introduction

A large number of scholars at home and abroad have confirmed through practical research that the development of children's gross motor skills promotes physical activity and physical health. The early childhood period is an important stage for improving the level of gross motor development (Gibson V, et all 2024). The learning of gross motor skills can promote the development of children's speed, strength, coordination and balance. For a long time, parents, schools and society have only focused on the intellectual development of children aged 3 to 6 and paid less attention to the development of their gross motor skills (Sun Lingling, et all 2023). Even many parents and preschool education institutions do not realize the importance of cultivating and training movement and motor skills for children aged 3 to 6. In addition, Gao Yun the non-professionalism of domestic preschool physical education teachers is also a major bottleneck restricting the development of children's gross motor skills (Gao Yun. 2020).

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In the existing research on the development of children's gross motor skills, most of them are concentrated in urban areas and coastal economically developed areas, and less attention is paid to poor counties and economically backward towns. Therefore, the study of the level of gross motor development of children in Haiying Town has certain theoretical significance for the development of gross motor skills of children in poor counties and towns.

Through this test, children in Haiying Town can be exposed to more sports and equipment, and "bring sports into the kindergarten" in the form of public welfare sports services, stimulate children's love and passion for sports training, and let kindergarten teachers understand the importance of children's gross motor development on children's future movements (Wu Shengkou, et all 2016). It has certain practical significance for promoting the development of children's gross motor skills in Haiying Town and providing suggestions and intervention strategies.

By using the most advanced gross motor development test TGMD-3 to test the gross motor skills of 100 children in five kindergartens in Haiying Town and conducting questionnaire surveys on their parents and kindergarten teachers, we can understand the current status of children's gross motor development, further explore the influencing factors of their gross motor development and put forward corresponding suggestions and intervention strategies. It is expected to solve the problems of children's gross motor level and physical quality development in Haiying Town, guide kindergarten teachers to cultivate their own physical literacy, and contribute to the physical quality development of children in Haiying Town and the development of sports (Lei Yuanyuan, et all 2018).

2. Method

100 children aged 3 to 6 years old from five kindergartens in Haiying Town, Sichuan Province, including Jinyan Kindergarten, Dingfeng Village Kindergarten, Qimeng Kindergarten, Hongqi Kindergarten and Congyi Kindergarten, were selected as the test subjects of this study.Through the literature method, the collected literature was analyzed and classified to obtain the literature required for the paper. Secondly, by consulting the evaluation tools and usage methods related to children's physical fitness, TGMD-3 was finally selected to test children's gross movements after comparison, as shown in **Table 1**. Test equipment: marking barrel, marking line, plastic baseball bat for children, fixed ball base, plastic tennis racket for children, rebound ball with line, inflatable soft ball for children, No. 3 football for children, basketball for children, tennis, two mobile phones and mobile phone holders.

Test method: Before the test, teach the children the movements first, let the children practice, and then test one movement twice, and take the average of the two tests as the test result of the movement.

Testers: kindergarten teachers (responsible for arranging children to take the test), 1 video recorder, and 2 testers (students of physical education who have learned gross motor skills). The children were tested in groups of 10. After practicing the movements, the test movements were no longer demonstrated. Each movement was performed twice by the children. The testers scored strictly according to the scoring standards for children's gross movements and the completion of the children. The final result was the average score of the two tests.

Test time: The test time is 3 weeks (Monday to Friday), 9:00~11:30 in the morning and 14:00~16:30 in the afternoon.

Table 1: Test of Gross Motor Development-3rd Edition

Test Item	Test purpose	Test Content
Displacement skills	Tests a child's ability to transfer their body from one support surface to another	Running, sliding forward, hopping on one foot, jumping, standing long jump, sliding sideways
Object control skills	Tests a child's ability to throw, catch, hit, and kick a ball	Swinging with both hands to hit a fixed ball, holding the racket with one hand to hit a rebounding ball, catching the ball with both hands, kicking a fixed ball, hitting the ball with one hand in place, throwing the ball over the shoulder, throwing the ball underhand

3. Results

According to the 13-motor skill scoring standards of TGMD-3, 100 children aged 3 to 6 years old from five kindergartens in Haiying Town (20 children in each kindergarten, with a male to female ratio of 1:1) were tested for gross motor skills. After the test, the maximum, minimum, average and difficulty values of each movement were obtained by sorting the data, as shown in **Table 2**.

Table 2: Overall scores of gross motor tests for children in Haiying Town (N=100)

Item	Full score	Average	Difficulty
Total score for displacement skills	46	38.22	0.83
Total score for object control skills	54	31.73	0.58
Total score for gross motor skills	100	69.95	0.69

As shown in **Table 3** among the displacement movement skills, the difficulty value of "running" is the highest (difficulty value = 0.92), indicating that the children aged 3 to 6 in Haiying Town have the best grasp of the movement skill of "running" and the highest degree of completion; on the contrary, the difficulty value of "standing long jump" is the lowest (difficulty value = 0.75), indicating that the children in Haiying Town have problems with the movement skill of "standing long jump". This action is more difficult for the children in Haiying Town, and the degree of completion is also the lowest. In addition, it was found in the test that in "standing long jump", the children's arm swing bending degree is small, the heel is far from the buttocks, and most of them land on the heel without obvious ground pushing. The difficulty values of displacement movement skills from high to low are "running", "jumping", "single leg hopping", "side sliding step", "front sliding step", and "standing long jump" are the lowest among the displacement movement skills, indicating that the children have poor grasp of this action and need to be paid attention to.

Table 3: Scores of displacement motor skills test for children in Haiying Town (N=100)

Item	Full score	Maximum	Minimum	Average	Difficulty
Running	8	8	6.25	7.37	0.92
Forward slide	8	8	5	6.36	0.79
Single-leg hop	8	8	5	6.72	0.84
Bounce	6	6	4	5.3	0.88
Standing long jump	8	8	4	6.02	0.75
Side slide	8	8	5	6.45	0.80
Total score of displacement skills	46			38.22	0.83

As shown in **Table 4**, the best developed action in object control skills is "catching the ball with both hands", which has the highest degree of completion. "Hitting the rebounding ball with one hand" has the lowest mean score and is also the worst action in gross motor development. Special attention should be paid to the problems of children in "swinging", "hitting", "turning", etc. The higher the degree of completion, the lower the difficulty, the more lacking the development of gross motor object control, and the greater the room for development.

Table 4: Overall scores of children's object control skills test in Haiying Town (N=100)

Item	Full score	Maximum	Minimum	Average	Difficulty
Two-handed swing to hit a fixed ball	10	8	3.5	6.02	0.60
One-handed grip to hit a rebounding ball	8	4	1.5	2.67	0.33
Two-handed catch	6	6	4	5.07	0.84
Kick a fixed ball	8	6.5	2.5	4.12	0.51
One-handed slam dunk	6	5	1.5	3.3	0.55
Over the shoulder throw	8	6.5	1.5	4.25	0.53
Underhand throw	8	8	1	6.3	0.78
Total score of object control skills	54			31.73	0.58

4. Discussions

In the test, it was found that the development level of the two actions of "forward sliding" and "side sliding" scored the lowest in displacement sports skills. When children slide, their hands and feet are often uncoordinated, and their elbows are bent unnaturally. In the "forward sliding" action, most children do not have obvious ground-pushing movements; in the "side sliding" action, most children's shoulders cannot be parallel to the ground, but are tilted forward.

The overall development level of children in Haiying Town in object control skills is poor, with an average score of 31.73 (difficulty value = 0.58). Through the test, it was found that children in Haiying Town have poor perception of the ball in this type of sports skills, and make mistakes in "swinging", "slapping", "kicking", "hip rotation" and other actions. For example, when "swinging with both hands to hit a fixed ball", many children's hips and shoulders on the side of the dominant hand face the direction of the ball, and there is no obvious rotation of the hips and shoulders when swinging, and they have no perception of ground-pushing and hip rotation. Among these seven motor skills, "hitting the rebound ball with one hand" is the worst developed, with an average score of 2.67 (difficulty value =

0.33). Children cannot throw the ball vertically to the ground, few children can complete the action of leading the racket backwards, and only a very few children can make the racket swing along with the ball to the shoulder of the holding hand after swinging the racket.

The problem of insufficient development of gross motor skills found in the test of children in Haiying Town can be analyzed from three levels. First, the degree of family attention: In the study of Xu Y, it was mentioned that many parents lack a correct understanding of sports activities, parents cannot provide scientific guidance for children's movements, and also believe that family parent-child sports behavior will increase children's interest in sports activities (Xu, Y. 2021). Zhao Shuangying believes that different family sports education attitudes will have an impact on family parent-child sports behavior, and there is a positive correlation (Zhao Shuangying 2020). The higher the degree of affirmation of sports by parents, the more they will take their children to participate in parent-child sports and the more sports guidance they will provide to their children. This is consistent with the view that most parents put their expectations on "cultural learning" but ignore the important impact of their children's participation in sports on their physical development.

Second, in terms of the degree of attention in schools: D R B mentioned in the study that due to the lack of professional physical education teachers, there is little contact with equipment projects, which is a reflection of the lack of movement skills and teaching methods (D R B, et all 2017). It proves that the conclusion drawn in this study is that the physical education teachers in Haiying Town kindergarten have little contact with professional physical education, resulting in little professional knowledge and practice in sports and exercise for kindergarten teachers. There is a lack of scientific guidance and teaching for children's sports and exercise, and there are blank areas and misunderstandings in many movements of children. And Kang Hailun set curriculum goals closely in line with the sensitive period of children's gross motor ability development, and designed children's physical education curriculum goals suitable for the characteristics of children's gross motor ability development at all ages (Kang Hailun, el all 2024). This is consistent with the view that this study proposes that for early school-age children aged 3 to 4, guided teaching of gross motor development should be carried out to promote the development of children's gross motor ability as early as possible and reduce individual differences.

Third, in terms of the degree of social attention: According to the research of Tong Tiantian, the government should strengthen the financial support for the infrastructure of children's sports and exercise in towns and villages, learn from the equipment of children's sports and exercise venues in urban areas, and reasonably introduce children's sports equipment into community construction in combination with rural economic conditions, venue facilities and children's needs (Tong Tiantian 2021). Li Jian pointed out in his research that only a few urban areas such as Taiyuan, Shanghai, and Jinan have established such equipment in my country, and there is no relatively unified national standard (Li Jian 2022). This has an adverse impact on the testing, evaluation and targeted teaching of children's gross movements in my country and is not conducive to popularizing the importance of children's gross movements to the society. This is also the social aspect of this study, which is described as the lack of public facilities, being too adult-oriented, and the extreme shortage of children's sports and exercise equipment in the community; the social policy support is imperfect, and there is a lack of a suitable localized evaluation system. These two social issues have led to the view that the development of gross movements of children in Haiying Town is limited.

5. Conclusion

The development of gross motor skills of children in Haiying Town is at a medium-low level, displacement skills are at a medium level, and object control skills are at a medium-low level. Attention and intervention are needed for the development of movements such as "standing long jump", "hitting the rebound ball with a single-handed racket", "kicking a fixed ball", and "hitting the ball with one hand in place".

The development of children's gross motor skills is affected by kindergartens, families, and communities, so corresponding suggestions are put forward: Kindergartens in many regions have opened children's sports game courses, such as Xi'an, Baoding, Jinan and other regions, which have a great role in promoting the development of children's movements. Suggested that kindergartens be equipped with professional physical education teachers, improve the core physical literacy of existing teachers, and configure sports-related equipment.

Improve the family's sports atmosphere, guide parents to pay attention to children's sports training, and attach importance to the development of children's gross motor skills. Parents are the first teachers of their children. They regularly take time to accompany their children in sports training. While promoting their own physical development, they also subtly influence their children through their own sports behavior.

The community will improve the public sports service system for young children, provide financial support, and improve the configuration of software and hardware facilities. The government will strengthen the financial support for the infrastructure for sports and exercise for young children in townships. Based on the village's economic situation, venues and facilities, and the needs of young children, it will reasonably introduce children's sports equipment into community construction, effectively promoting the development of gross motor skills of young children in Haiying Town.

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