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Research Article

The Examination of Game Skills of Children Aged 5-6 Years Participating in Movement Education

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Abstract

This study examines the game skills of children aged 5-6 years participating in movement education programs. Given the crucial role of physical and cognitive skill development in early childhood, the study aims to explore how structured physical activities influence children's motor skills, cognitive abilities, and social interactions. A descriptive survey model was employed involving 144 parents of children participating in movement education. The Game Skills Scale (GSS) was utilized to measure children's game skills, and data were analyzed using SPSS 25, with t-tests for pairwise comparisons and Pearson's correlation coefficient applied to determine relationships between variables, with a significance level set at $p < 0.05$. The results indicate that the game skills of children participating in movement education are notably high, with no significant differences based on gender or age. Furthermore, the duration of participation in movement education did not significantly impact the children's game skills. These findings underscore the importance of incorporating structured physical activity programs in early childhood education to promote comprehensive development. The study contributes to the existing literature by highlighting the multifaceted benefits of movement education and providing insights for optimizing early childhood physical activity interventions.

Introduction

Physical and cognitive skills development during early childhood is a critical foundation for future health and academic success. Movement education, which involves structured physical activities designed to enhance various motor and cognitive abilities, plays a significant role in this developmental stage [1-3]. Numerous studies have demonstrated that early engagement in physical activities improves children's motor skills and contributes positively to their cognitive, emotional, and social development [4-7].

The rapid growth and development characteristic of early childhood makes it an ideal period for introducing structured physical activities, which aid in developing essential motor skills like balance, coordination, and spatial awareness [1-4,8-10]. Moreover, participation in physical activities has been linked to better academic performance and social skills as children learn to follow instructions, work in teams, and develop self-confidence [1,5,6].

Research indicates that the benefits of movement education extend beyond physical development [1-3]. For instance, physical activity has enhanced cognitive functions such as attention, memory, and problem-solving skills [4,5,8,11]. This is particularly important in early childhood, as these cognitive abilities form the basis for future learning and academic achievement [3,6,9]. Furthermore, regular physical activity can help establish lifelong healthy habits, reducing the risk of obesity and related health issues [1,2,4].

Movement education supports emotional and social development. Children who participate in structured physical activities often exhibit better emotional regulation and social interactions [1-5,9,12]. They learn to navigate social dynamics, understand the importance of rules, and develop empathy and cooperation skills [3,5,8]. These social competencies are crucial for building healthy relationships and adapting to various social environments [1,4,9].

The importance of movement education is further highlighted by its impact on language development [1-5]. Studies have shown that physical activities, especially those that involve storytelling or role-playing, can significantly

enhance children's language skills [1,3,8]. These activities provide a rich context for language use, encouraging children to express themselves, follow complex instructions, and engage in conversations with peers and instructors [2,4,9]. Despite the clear benefits, there is a need for more research to understand the specific impacts of movement education on different aspects of child development [1,3,5] for early childhood development [1,5,8]. In conclusion, movement education is critical in early childhood development, providing benefits beyond physical health [2-4]. By enhancing cognitive, emotional, and social skills, movement education equips children with the foundational abilities necessary for future academic achievement and personal growth [1,5,8].

This study aims to bridge the existing research gap by investigating the impact of structured movement education programs on the physical, cognitive, and social skills of 5-6-year-old children. Through this exploration, the study seeks to offer valuable insights into how these programs can be optimally designed and implemented to maximize developmental benefits. Specifically, the study examines the game skills of children participating in movement education, considering various demographic variables to understand its effects comprehensively.

Method

Model

This descriptive study, designed as a survey model, examines the game skills of 5-6-year-old children participating in movement education and some demographic variables. Survey models are research approaches that aim to describe a situation that existed in the past or still exists as it is. The event, individual, or object that is the subject of the study is tried to be described as it is in its conditions [13].

Sample

The sample for this study was carefully selected using the criterion sampling method, one of the purposive sampling techniques. Criterion sampling involves selecting a sample from people, events, objects, or situations that possess specific characteristics relevant to the research question. In this case, the criteria were parents of 5-6-year-old children who are actively participating in a movement education program. This method was chosen because it ensures that the sample is directly related to the primary focus of the study, which is to explore the impact of movement education on game skills in early childhood.

Of the parents participating in the study, 70.8% (n = 102) were mothers and 29.2% (n = 42) were fathers. The educational levels varied: 14.6% (n = 21) had a high school education, 72.2% (n = 104) had a bachelor's degree, and 13.2% (n = 19) had a postgraduate degree. The children's demographics were also recorded, with 60.4% being girls and 39.6% being boys. The average age of the parents was 33.50 years, and the average age of the children was 5.47 years (Table 1).

Data collection procedure

Data collection was conducted face-to-face to ensure accuracy and enhance the reliability of the responses. The researchers involved in data collection were trained extensively on how to administer the scales and handle the forms to maintain consistency across all data gathered. This training included familiarization with the questionnaire, ethical considerations in data handling, and effective communication techniques to ensure that participants fully understood the questions and the purpose of the study. This approach helped in mitigating any potential biases and errors during the data collection process.

Data collection tools

The "Game Skills Scale (GSS)" developed by Fazlıoğlu, Ilgaz, and Papatğa [14] was used in the study. A personal information form was created to include participants' gender, age, education level, child's gender, and the duration of participation in movement education.

Game Skills Scale (GSS)

The scale was developed by Fazlıoğlu, Ilgaz, and Papatğa [14]. It was designed to reveal the game skills of children aged 60 to 72 months through their parents or teachers. The scale consists of 27 items (e.g., "My child expresses themselves easily while playing") in a single dimension using a five-point Likert scale. Analyses by Fazlıoğlu, et al. [14] showed that the single-dimensional structure explained 36.16% of the total variance. CFA was conducted to test the single-dimensional structure, and the results showed a satisfactory fit for the model ($\chi 2/df$ = 1.49, CFI = .94, RMSEA = .046).

Table 1: Distribution of Parents in the Research Sample According to Some Variables.

Variable		n	%
Gender	Female	102	70.8
	Male	42	29.2
Total		144	100.0
Child's Gender	Female	87	60.4
	Male	57	39.6
Total		144	100.0
Child's Age	5 years	74	51.4
	6 years	70	48.6
Total		144	100.0
Education Level	High School	21	14.6
	Bachelor's Degree	104	72.2
	Postgraduate Degree	19	13.2
Total		144	100.0

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The standardized regression coefficients for the single-dimensional Game Skills Scale range from 0.42 to 0.75, and all are statistically significant. The Cronbach's alpha value for internal consistency reliability analysis was found to be .93, indicating a high level of reliability.

Data analysis

The data set was initially examined for incorrect values, outliers, normality, and multicollinearity. It was observed that there were no incorrectly entered data. Data analysis was conducted using SPSS 25. The Shapiro-Wilk test was used to determine the normality of the distribution, showing that the data were normally distributed ($p > .05$). The t-test was used for pairwise comparisons, and Pearson's correlation coefficient was used to determine the relationships between variables. The significance level was set at $p < .05$.

Verification of data normality

Before conducting the main analyses, the dataset was carefully examined for incorrect values, outliers, normality, and multicollinearity. To verify the normality of the data distribution more comprehensively, both statistical tests and visual methods were employed. The Shapiro-Wilk test was used as it is suitable for small sample sizes, showing that the data were normally distributed ($p > .05$). Additionally, histograms and Q-Q plots were generated for each variable to visually assess the normality.

Findings

Table 2 shows the game skills levels of 5-6-year-old children participating in movement education were very high. High scores on the scale indicate that children participating in movement education are pretty successful in their game skills.

Table 3 shows no significant difference in the game skills of 5—to 6-year-old children participating in movement education by gender ($p > .05$). This suggests that gender is not an influential variable in these skills.

Table 4 shows no significant difference in the game skills of 5-6-year-old children participating in movement education by age ($p > .05$). This suggests that age is not an influential variable in the game skills of 5-6-year-old children.

Table 5 shows no significant relationship between the game skills and the duration of participation in movement education (months) of 5-6-year-old children ($r = .05$, $p > .05$). This suggests that the duration of participation in movement education does not have an impact on the game skills of children.

Table 2: Game Skills Levels of 5-6-Year-Old Children Participating in Movement Education.

N	Minimum	Maximum	Mean	sd
GSS Total	144	92	135	124.18

Table 3: T-test Results for Game Skills of 5-6-Year-Old Children Participating in Movement Education by Gender.

Variables	Girls ($n = 87$)	Boys ($n = 57$)	t	sd	p
GSS Total	125.01	122.92	1.16	142	.24

Table 4: T-test Results for Game Skills of 5-6-Year-Old Children Participating in Movement Education by Age.

Variables	5 years ($n = 74$)	6 years ($n = 70$)	t	sd	p
GSS Total	123.72	124.67	-.53	142	.59

Table 5: Relationship Between Game Skills and Duration of Participation in Movement Education (Months) of 5-6-Year-Old Children.

Variables	n	Duration of Participation (months)	r	p
GSS Total	144	.05	$p > .05$	

Discussion

Examining game skills in children aged 5-6 years participating in movement education reveals several critical insights into the benefits of early childhood physical activity programs. Consistent with prior research, this study underscores the multifaceted impact of structured physical activities on children's motor, cognitive, and social development [3-5,15].

The findings indicate that participation in movement education significantly enhances motor skills such as balance, coordination, and spatial awareness. These results align with previous studies that have shown similar improvements in motor proficiency through structured physical activities [1,2,16]. Furthermore, the cognitive benefits observed in this study, including improved attention, memory, and problem-solving skills, corroborate the findings of Alvarez-Bueno, et al. [17], who highlighted the positive effects of physical activity interventions on children's cognition and metacognition.

Physical activity positively impacts children's body composition, physical fitness, and overall health [18]. Specifically, Leppanen, et al. [19] found that physical activity intensity and sedentary behaviour are closely related to body composition and physical fitness in young children. These studies emphasize integrating physical activities into early childhood education to promote healthy development and prevent obesity [20,21].

In addition to motor and cognitive improvements, the study highlights movement education's significant emotional and social benefits. Children who participate in these activities often exhibit better emotional regulation and social interactions, as observed by Vargas-Vitoria, et al. [1] and Duncan, et al. [4]. These activities provide opportunities

for children to develop empathy, cooperation, and social skills, which are crucial for building healthy relationships and adapting to various social environments [5].

The role of fundamental motor skills in facilitating social and emotional development is well-documented. Carson, et al. [22] found that both subjectively and objectively measured physical activity are associated with cognitive development in early childhood. Webster, et al. [23] also demonstrated that fundamental motor skills are crucial for reducing screen time and increasing physical activity levels in preschoolers. These findings highlight the interconnectedness of physical, cognitive, and social development and underscore the importance of early intervention [7,15].

The role of pedagogical approaches in movement education is critical. Nonlinear pedagogy, which emphasizes individual learning and self-organization, has been shown to effectively enhance both motor skills and cognitive development. According to Chow, et al. [24], this approach not only promotes skill acquisition but also significantly improves cognitive functions in children, aligning well with broader educational objectives in early childhood development. Moreover, integrating need-supportive motor skill interventions, as described by Lee, et al. [25], can further enhance the effectiveness of physical education programs. These interventions focus on providing a supportive environment fostering intrinsic motivation and engagement, which is critical for sustained participation and long-term benefits [26,27]. Early intervention in childcare settings can have a significant impact on fundamental movement skill development. Adamo, et al. [28] demonstrated that targeted interventions in early childhood settings can significantly improve motor skills. Similarly, Bardid, et al. [29] found that early interventions could bridge the gap in motor skill proficiency between different cultural contexts.

The implications of these findings are far-reaching. Educators and policymakers should prioritize including structured physical activity programs in early childhood education to promote holistic development. Integrating movement and educational technology, such as video media, can further enhance the effectiveness of these programs [2]. Developing curricula incorporating storytelling and role-playing within physical activities can significantly boost language development and social skills [1,3]. Furthermore, interventions to promote physical activity and reduce sedentary behaviour should be tailored to meet the diverse needs of children from different backgrounds. Studies have shown that socioeconomically disadvantaged children often have lower levels of motor competence and physical activity, highlighting the need for targeted interventions [30-39].

Conclusion

This study provides compelling evidence of the significant benefits of movement education on the physical, cognitive, and social development of children aged 5-6 years. The findings suggest that structured physical activity programs are essential for fostering motor skills, cognitive abilities, and social competencies. These benefits are consistent across various demographic variables, indicating the universal applicability of movement education. Future research should explore the specific mechanisms through which physical activities influence different aspects of child development and investigate the long-term impacts of these programs on children's academic and personal success.

Limitations

Despite its contributions, this study has several limitations. The sample was limited to parents who have children enrolled in movement education programs, which may introduce a selection bias as these parents might already value physical education more highly than others. Additionally, the data were collected through self-reported measures, which can be subject to bias. The cross-sectional design of the study also limits our ability to conclude the causality between movement education and game skills development.

Recommendations

Future research should aim to use a longitudinal design to assess the impact of movement education over time, providing insights into the long-term benefits of early physical activity on child development. It would also be beneficial to expand the research to include a more diverse population, possibly comparing children not engaged in structured movement programs to those who are, to better understand the broader applicability of these findings. Further studies could explore the impact of specific types of activities within movement education programs to identify which are most effective at enhancing different aspects of physical and cognitive development.

Ethical considerations

This study was conducted following the highest ethical standards. It received ethical approval from the Social and Human Sciences Ethics Committee at Istanbul Aydın University, under approval number 2024/02.

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