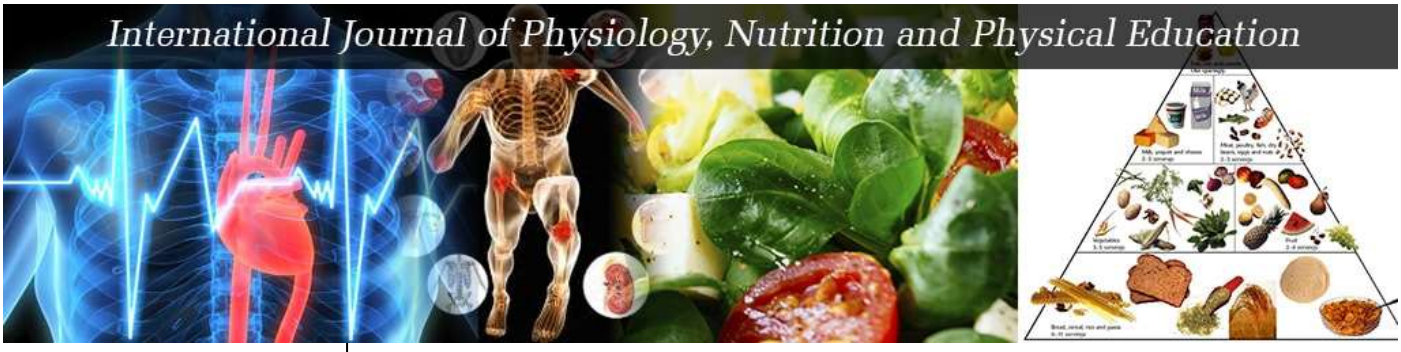

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Hopscotch and Physical fitness development in early childhood: Pre-service teachers' perspectives

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Abstract
This cross-sectional survey study investigated pre-service teachers' perceptions of the influence of playing hopscotch on the physical fitness development of pupils at the University of Education, Winneba (UEW). The study was grounded in the Social Cognitive Theory and underpinned by the positivist philosophy. A sample of 891 pre-service teachers was selected using stratified random sampling to ensure representation across gender. Data were collected through a structured questionnaire, which included demographic information and five-point Likert-scale items to assess perceptions of hopscotch's influence on physical fitness components, and perceived challenges. The questionnaire gained a reliability coefficient of 0.79 and 0.82 for perceived benefits and challenges respectively. Means, standard deviations, independent samples t-tests and Pearson's correlation analysis were used to analyze the data. It was revealed that Pre-service teachers perceive hopscotch as a multifaceted tool that can enhance physical fitness, motor skills, and social interaction in pupils, with some variation in their beliefs about its broader and long-term benefits. Also, the analysis suggested that a combination of curriculum, training, facilities, and cultural factors affects the ability of pre-service teachers to effectively promote physical fitness in pupils. The study concluded that hopscotch is viewed as a valuable physical activity for promoting various aspects of physical fitness in pupils, and it suggested that integrating hopscotch into physical education curricula may enhance children's fitness development.

Keywords: Hopscotch, physical fitness, pre-service teachers, physical education, cross-sectional survey, pupil's development

Introduction
In the contemporary landscape of early childhood education, there is an increasing emphasis on holistic development that encompasses not just cognitive and academic growth but also physical, social, and emotional well-being. A vital component of this holistic approach is the enhancement of physical fitness and gross motor skills during early childhood, which are crucial for establishing a foundation for healthy, active lifestyles. One traditional game that has gained attention for its potential to foster physical fitness in pupils is hopscotch. This engaging and straightforward game involves a range of locomotor skills, including hopping, jumping, and balancing, promoting essential physical abilities that contribute to overall fitness. Historically, hopscotch has a rich cultural lineage, having been played in various forms across ancient civilizations, including Greece and Rome, where it was known as "akhetera" and "ludus latrunculorum," respectively (Clements & Schneiderheinze, 2008) [8]. Its presence has been documented across cultures, from China and India to Europe, and in Ghana, where it remains a beloved children's activity. The game serves as a cultural bridge, connecting generations and preserving traditions. This intergenerational transmission of hopscotch not only enhances cultural identity but also fosters social interaction and community bonding (Frost *et al.*, 2012) [13].

In the Ghana, hopscotch holds significant educational value, particularly in promoting the holistic development of pupils. Numerous studies have identified its benefits in fostering gross motor skills such as balance, coordination, and agility-essential for physical fitness (Gallahue & Ozmun, 2006). Ofori-Amoah and Asare (2019) [14, 21] found that preschool children engaged in structured hopscotch activities showed marked improvements in locomotor skills, demonstrating the game's effectiveness in enhancing physical fitness and overall motor competence. Beyond physical benefits, hopscotch also plays a role in cognitive development.

It encourages spatial awareness, problem-solving skills, and the ability to follow rules and instructions (Burdette & Whitaker, 2005) [7]. Research by Baffour-Awuah and Abane (2016) [3] indicates that children participating in hopscotch develop better spatial relationships and problem-solving strategies, which are crucial cognitive skills for their overall development. Additionally, hopscotch facilitates social and emotional development by promoting interaction, cooperation, and negotiation among children (Pellegrini, 2009) [24]. Ampofo and Owusu-Ansah (2018) highlighted those children who engaged in hopscotch exhibited improved social skills, emotional regulation, and the capacity to follow rules, all of which are essential competencies for navigating social environments. This study seeks to explore the perspectives of pre-service teachers regarding the influence of hopscotch on the physical fitness development of pupils. Understanding these perspectives is critical for informing curriculum development and teacher training programmes, ensuring that traditional games like hopscotch are effectively integrated into early childhood education frameworks to promote the holistic development of young learners.

Statement of the problem

Physical fitness is a crucial aspect of early childhood development, contributing to overall health, well-being, and motor skills. Traditional games like hopscotch play an essential role in fostering this development by engaging children in active play that promotes gross motor skills such as hopping, jumping, and leaping. Hopscotch, which has historical and cultural significance in Ghana, provides a simple yet versatile framework for children to engage in moderate to vigorous physical activity. Research has demonstrated the positive impact of hopscotch on children's physical fitness, cognitive skills, social interaction, and emotional regulation (Clements & Schneiderheinze, 2008; Gallahue & Ozmun, 2006; Frost *et al*., 2012) [8, 13, 14]. Despite these benefits, the extent to which pre-service teachers in early childhood education recognize and utilize hopscotch as a tool for physical fitness development remains largely unexplored, particularly in the context of teacher education in Ghana. Pre-service teachers are crucial in shaping the future of education, especially in early childhood settings. Their perspectives on integrating traditional games like hopscotch into educational programmes can significantly influence how physical fitness is promoted among pupils. Pellegrini (2009) [24] emphasizes the role of play in child development, highlighting how games like hopscotch foster creativity, problem-solving, and adaptability. However, there is a gap in understanding whether pre-service teachers recognize the full potential of hopscotch as more than just a recreational activity, but as a valuable tool for enhancing physical fitness and motor development in early childhood.

Given the increasing emphasis on holistic education in Ghana, where physical, social, emotional, and cognitive development are all important, understanding pre-service teachers' perspectives on the educational value of hopscotch is vital. This knowledge can inform curriculum design, teacher training programmes, and education policies to prioritize play-based learning activities. It is particularly important for institutions like the University of Education, Winneba (UEW), which trains a significant number of Ghana's pre-service teachers, to assess and enhance their trainees' understanding of how traditional games can contribute to physical fitness development. Investigating how UEW's pre-service teachers view hopscotch in the context of physical fitness development can offer valuable insights into how best to integrate such activities into early childhood education. Moreover, it can help identify gaps in teacher preparation programmes and provide recommendations for enhancing the integration of play-based activities to ensure the holistic development of children in the Effutu Municipality and beyond. Addressing these gaps is essential for creating learning environments that prioritize both the physical and cognitive development of pupils, thereby promoting a lifetime of healthy and active living.

Purpose of the study

This study examined Pre-service teachers' perceptions and challenges in promoting physical fitness development through hopscotch.

Research Objectives

The objectives of the study included:

1. Determine the perceptions of pre-service teachers regarding the influence of hopscotch on the physical fitness development of pupils?
2. Ascertain pre-service teachers' perceived challenges regarding the use of hopscotch for physical fitness development of pupils?

Research Questions

The research questions were:

1. What are the perceptions of pre-service teachers regarding the influence of hopscotch on the physical fitness development of pupils?
2. What challenges do pre-service teachers perceive in relation to the physical fitness development of pupils?

Hypotheses

The following hypotheses were tested at 0.05 level of significance.

Ho_2: There are no statistically significant differences in pre-service teachers' perceptions of the influence of hopscotch on physical fitness development across different gender.

Ho_2: There is no statistically significant relationship between pre-service teachers' perceptions and their perceived challenges in relation to the physical fitness development of pupils.

Theoretical Framework

This study is grounded in Social Cognitive Theory (SCT), developed by Albert Bandura in 1960. SCT is a comprehensive theoretical framework that elucidates how individuals learn and develop through the interplay of personal, behavioral, and environmental factors. This theory is particularly pertinent for examining the influence of hopscotch on the physical fitness development of pupils, as it accounts for the critical role of social and cognitive processes in shaping behavior. According to SCT, an individual's behavior is influenced by personal factors (such as beliefs and emotions), the actions of others, and environmental conditions, with these elements engaging in a constant, reciprocal interaction. In the context of this study, pre-service teachers observe and model behaviors related to hopscotch, allowing them to learn and understand its impact on children's physical fitness. The theory emphasizes the significance of self-efficacy-an individual's belief in their capabilities which directly affects their motivation, effort, and persistence in engaging in physical activities like hopscotch.

SCT serves as an appropriate framework for this research by providing insights into how pre-service teachers' perceptions influence their understanding of hopscotch's role in children's physical fitness development. The theory highlights the importance of the social environment, specifically, how the modeling and encouragement from pre-service teachers can enhance children's engagement in hopscotch and, consequently, their physical fitness. Additionally, it addresses the significance of children's self-efficacy beliefs and expectations of positive outcomes in motivating their participation in hopscotch and other physical activities. Furthermore, SCT underscores the reciprocal influence between children's physical fitness development and various factors, including personal factors (like enjoyment and perceived competence) and environmental conditions (such as the availability of play spaces and support from pre-service teachers). By adopting Social Cognitive Theory, this study aims to explore the complex interactions among individual, behavioral, and environmental factors that contribute to the perceived positive impact of hopscotch on the physical fitness development of pupils, as understood by pre-service teachers at the University of Education, Winneba (UEW).

Research Design

This study employed a cross-sectional survey design to investigate the influence of playing hopscotch on the physical fitness development of children, as perceived by pre-service teachers at the University of Education, Winneba (UEW). A cross-sectional design is well-suited for this type of research as it allows for the collection of data at a single point in time, providing a snapshot of pre-service teachers' perceptions. This approach is widely used in educational research to explore relationships between variables within a defined population (Creswell & Creswell, 2018) [10]. The study sampled 891 pre-service teachers; a number determined through power analysis to ensure adequate statistical power for analysis. A stratified random sampling technique was used, with participants categorized by their year of study (1st, 2nd, 3rd, and 4th year) to ensure representation across all educational levels. This method helps to capture diverse perspectives and ensures that the findings reflect the varied experiences of the study population (Patton, 2015) [23]. Data were collected using a self-administered survey questionnaire, which was divided into two sections: demographic information and perceptions of hopscotch's influence on physical fitness.

The demographic section included questions about participants' gender, and age. The perception section consisted of Likert-scale items (1= Strongly Disagree to 5 = Strongly Agree) designed to assess pre-service teachers' views on hopscotch's impact on various aspects of physical fitness, such as cardiovascular endurance, muscular strength, balance, and coordination. These items were developed based on a review of relevant literature and input from experts in the field, which is recommended for ensuring content validity in survey design (DeVellis, 2016) [11]. The questionnaire gained a Cronbach's alpha coefficient of 0.79 and 0.82 for perceived benefits and challenges respectively. The data collected were analyzed using SPSS software. Descriptive statistics, such as means and standard deviations, were used to summarize participants' responses, while inferential statistics, including independent samples t-tests and Pearson's correlation analysis, were employed to examine relationships and differences among the variables. This analytical approach follows established procedures in educational research for investigating physical activity interventions (Field, 2018).

Ethical approval for the study was obtained from the Institutional Review Board (IRB) at the University of Education, Winneba. All participants provided informed consent, and they were assured that their responses would remain confidential and anonymous. Participants were also informed of their right to withdraw from the study at any time without penalty, adhering to ethical standards in human subjects' research (American Psychological Association, 2017) [1]. This cross-sectional survey provided a comprehensive understanding of pre-service teachers' perceptions of the influence of hopscotch on the physical fitness development of pupils.

Data Analysis

Table 1: Demographic data of teachers

Variable	Frequency	Percentage
Gender		
Male	563	57.4
Female	418	42.6
Total	981	100
Age Group		
Below 20	79	8.1
20-29	524	53.4
30-39	357	36.4
40-49	21	2.1
Total	981	100

***Source*:** Fieldwork, 2024

The demographic data of the pre-service teachers in the study reveals notable trends in terms of gender and age distribution. The sample, which consisted of 981 pre-service teachers, was slightly skewed towards male participants. Specifically, 563 of the participants, accounting for 57.4% of the total, were male, while the remaining 42.6% (418 participants) were female. This imbalance suggests that more men than women are represented in the teaching population surveyed, which may reflect broader gender trends within the specific context of teacher education at the University of Education, Winneba (UEW).

In terms of age distribution, the majority of the pre-service teachers were in the younger age brackets. Most participants, 53.4% (524), were aged between 20-29 years, indicating that the largest proportion of future teachers in the study were early to mid-career individuals, which is typical for teacher education programmes. An additional 36.4% (357) of the participants were in the 30-39 age group, showing that a significant portion of the sample includes older students. A smaller number of pre-service teachers were either very young. Specifically, 8.1% (79) of the participants were below 20 years, suggesting they likely entered the programme immediately after completing secondary education. On the other end of the spectrum, only 2.1% (21 participants) were between the ages of 40-49, indicating that older individuals made up a small proportion of the pre-service teacher population in this sample. The demographic profile indicates a relatively young and predominantly male group of pre-service teachers, with a significant presence of individuals in their twenties and thirties. This demographic information provides essential context for understanding the perspectives these pre-service teachers may hold regarding physical fitness development and how it might relate to their stage in life and teaching preparation programme.

Research Question: What are the perceptions of pre-service teachers regarding the influence of hopscotch on the physical fitness development of pupils?

Table 2 presents the perceptions of pre-service teachers regarding the influence of hopscotch on the physical fitness development of pupils. The responses are measured using a Likert scale, with the corresponding means (M) and standard deviations (SD) indicating the level of agreement and the variation in responses.

Table 2: Perception regarding the influence of hopscotch on the physical fitness development

Item	M	SD
Playing hopscotch improves cardiovascular fitness in pupils.	4.12	0.07
Hopscotch enhances coordination skills among pupils.	4.04	0.08
Hopscotch helps improve children's balance and stability.	3.86	0.05
Hopscotch as an effective way to develop children's agility and quickness.	3.83	0.01
Hopscotch contributes to the overall physical fitness of pupils.	3.82	0.74
Playing hopscotch promotes social interactions among pupils.	3.79	0.29
I think hopscotch can be integrated into physical education curricula for children.	4.12	0.37
Hopscotch helps children develop fundamental movement skills.	4.04	0.48
Playing hopscotch fosters children's enjoyment of physical activities.	3.86	0.55
Hopscotch can be modified to accommodate children with varying physical abilities.	3.83	0.31
Hopscotch can be a fun and engaging way to teach physical fitness concepts.	3.82	0.64
Participating in hopscotch helps pupils develop perseverance and resilience.	3.79	0.25
Hopscotch as a valuable tool for promoting lifelong physical activity habits in children.	3.52	0.47
Mean or means/Standard Deviation	3.88	0.33

***Source*:** Fieldwork, 2024

Pre-service teachers generally agree that playing hopscotch has a positive impact on various aspects of children's physical fitness. The highest mean score is seen in the item "Playing hopscotch improves cardiovascular fitness in pupils" (M = 4.12, SD = .07), suggesting strong agreement that hopscotch positively influences cardiovascular health. Similarly, the item "I think hopscotch can be integrated into physical education curricula for children" (M = 4.12, SD = .37) also received a high rating, reflecting pre-service teachers' belief in the potential of hopscotch as a structured part of children's physical education. Items related to the development of coordination and fundamental movement skills also scored high, with "Hopscotch enhances coordination skills among pupils" (M = 4.04, SD = .08) and "Hopscotch helps children develop fundamental movement skills" (M = 4.04, SD = .48) both reflecting strong agreement. These results suggest that hopscotch is viewed as an effective activity for enhancing children's motor skills. Additionally, pre-service teachers recognize the benefits of hopscotch in developing balance and agility. The items "Hopscotch helps improve children's balance and stability" (M = 3.86, SD = .05) and "Hopscotch as an effective way to develop children's agility and quickness" (M = 3.83, SD = .01) demonstrate that hopscotch is considered valuable for improving children's physical control and speed. Social and psychological benefits were also acknowledged. The statement "Playing hopscotch promotes social interactions among pupils" (M = 3.79, SD = .29) and "Participating in hopscotch helps pupils develop perseverance and resilience" (M = 3.79, SD = .25) indicate that pre-service teachers see hopscotch as a way to foster not only physical but also social and emotional development. Although most items received strong agreement, the item "Hopscotch as a valuable tool for promoting lifelong physical activity habits in children" had a relatively lower mean score (M = 3.52, SD = .47), suggesting some variation in perceptions about hopscotch's long-term impact on children's fitness habits. The overall mean perception score is 3.88 with a standard deviation of 0.33, indicating a generally positive view of hopscotch as an activity that supports various aspects of physical development, although there is some variation in responses.

Table 3: Perceived challenges regarding the use of hopscotch for physical fitness development

Items	M	SD
Time constraints in the curriculum as a challenge for implementing physical fitness activities.	4.56	0.83
Insufficient training on physical fitness education affects pre-service teachers' ability to teach pupils effectively.	4.37	0.42
The lack of interest from pupils poses a challenge in promoting physical fitness.	4.33	0.36
Inadequate facilities (e.g., playgrounds, gymnasiums) as a barrier to physical fitness development for children.	4.15	0.48
I think that cultural attitudes toward physical activity can hinder pupils's engagement in fitness activities.	3.83	1.12
Technology and screen time negatively impacts children's physical fitness development.	3.80	0.58
I believe that the varying skill levels among children in a single class present a challenge for physical fitness instruction.	3.77	0.42
Safety concerns limit opportunities for children to participate in physical activities.	3.72	0.46
Mean of means/Standard Deviation	4.07	0.58

***Source*:** Fieldwork, 2024

Table 3 presents the perceived challenges pre-service teachers face in promoting physical fitness development in pupils through hopscotch and other activities. The overall mean score is 4.07, with a standard deviation of 0.58, indicating that pre-service teachers generally agree on the existence of significant barriers to the effective implementation of physical fitness activities in early childhood education. The highest-rated challenge is "Time constraints in the curriculum as a challenge for implementing physical fitness activities" (M = 4.56, SD = 0.83). This suggests that pre-service teachers find it difficult to allocate sufficient time to physical fitness within the current curriculum structure. Another major concern is "Insufficient training on physical fitness education" (M = 4.37, SD = 0.42), highlighting the need for better preparation

in teaching physical fitness effectively. Other notable challenges include “Lack of interest from pupils” (M = 4.33, SD = 0.36) and “Inadequate facilities” (M = 4.15, SD = 0.48), which point to both environmental and motivational factors impacting the physical fitness development of children. The perception that “Cultural attitudes toward physical activity can hinder pupils’ engagement” (M = 3.83, SD = 1.12) and the impact of “Technology and screen time” (M = 3.80, SD = 0.58) also reflect broader societal challenges. Lower-rated challenges include “Varying skill levels among children in a single class” (M = 3.77, SD = 0.42) and “Safety concerns” (M = 3.72, SD = 0.46), though these are still recognized as relevant obstacles.

Ho_2: There are no statistically significant differences in pre-service teachers’ perceptions of the influence of hopscotch on physical fitness development across different gender.

To analyze Hypothesis 2 (Ho2), which posits that "there are no statistically significant differences in pre-service teachers’ perceptions of the influence of hopscotch on physical fitness development across different genders," a comparative analysis is required. The aim of this analysis was to determine whether male and female pre-service teachers hold similar or differing views on the role of hopscotch in promoting physical fitness in early childhood education. An independent samples t-test was employed to evaluate whether any observed differences in perceptions are statistically significant, thereby determining whether the null hypothesis (Ho2) should be accepted or rejected. The result is presented in Table 4.

Table 4: Gender Differences in perception regarding physical fitness development of pupils

Gender	N	Mean	Std. Dev.	T	df	Sig-Value
Male	563	3.52	0.67	0.363	979	0.717
Female	418	3.47	0.45			

***Source*:** Field Data, 2024

Table 4 presents an analysis of gender differences in perceptions regarding the influence of physical fitness development in pupils, based on a sample of 981 pre-service teachers. Among the 563 male participants, the mean perception score is 3.52, with a standard deviation of 0.67, indicating a moderately positive perception of the role of physical fitness activities in children’s development. In comparison, the 418 female participants report a slightly lower mean perception score of 3.47 and a standard deviation of 0.45, suggesting a similar, albeit somewhat less favorable, view. The t-test results yield a t-value of 0.363 and 979 degrees of freedom, with a significance value (p-value) of 0.717. This p-value exceeds the conventional threshold of 0.05 for statistical significance, indicating no significant differences in perceptions between male and female pre-service teachers regarding physical fitness development. The current findings align with the research conducted by Kovalchik *et al*. (2019) [17], which indicated that gender does not significantly affect teachers’ perceptions of physical education. This could imply that regardless of gender, pre-service teachers are equipped with an understanding of the critical role physical fitness plays in child development, which is vital for promoting a culture of health and wellness in educational settings.

Ho_2: There is no statistically significant relationship between pre-service teachers’ perceptions and their perceived challenges in relation to the physical fitness development of pupils.

To analyze hypothesis 2 (Ho2), which states that "there is no statistically significant relationship between pre-service teachers’ perceptions and their perceived challenges in relation to the physical fitness development of pupils," a correlation analysis is needed. This analysis explored whether there is a significant association between how pre-service teachers perceive the role of hopscotch in fostering physical fitness and the challenges they encounter in promoting physical fitness development in pupils. Pearson correlation was conducted to evaluate the strength and direction of this relationship, determining whether the null hypothesis (Ho2) should be accepted or rejected. The result which provides valuable insights into how perceived challenges may shape or hinder pre-service teachers’ views on physical fitness development in early childhood education settings is presented in Table 5.

Table 5*:* Relationship between perceptions and challenges in physical fitness development of pupils

Variable	N	Mean	Sd	R	P
Perception	981	3.88	0.33	0.800	0.000
Challenges	981	4.07	0.58		

***Source*:** Fieldwork, 2024

Table 5 presents the relationship between perceptions and challenges related to the physical fitness development of pupils, as reported by pre-service teachers. The results indicate a significant positive correlation between perceptions and challenges, with a correlation coefficient (R) of 0.800 and a p-value of 0.000, suggesting that the relationship is statistically significant at the 0.01 level. The mean score for perceptions of hopscotch’s influence on physical fitness development is 3.88 (SD = 0.33), reflecting overall agreement among the pre-service teachers that hopscotch positively contributes to children’s physical fitness. On the other hand, the mean score for challenges faced in promoting physical fitness is slightly higher at 4.07 (SD = 0.58), indicating that pre-service teachers recognize notable barriers to implementing physical fitness activities. The strong positive correlation implies that as pre-service teachers’ awareness of the benefits of physical fitness development increases, so does their recognition of the challenges associated with implementing these activities. This relationship highlights the need for addressing challenges in order to effectively harness the perceived benefits of activities like hopscotch in promoting physical fitness among pupils.

Discussions

The perceptions regarding hopscotch’s influence on physical fitness development were largely positive, reflected in an overall mean score of 3.88. Pre-service teachers recognized hopscotch as beneficial for improving cardiovascular fitness (M = 4.12) and enhancing coordination skills (M = 4.04). This positive perception aligns with literature that highlights the role of playful activities in promoting physical fitness among pupils. For instance, McKenzie *et al*. (2019) [20] emphasize that games like hopscotch are effective in developing various motor skills, crucial for children’s physical health.

Moreover, the acknowledgment that hopscotch fosters social interactions (M = 3.79) and enjoyment of physical activities (M = 3.86) supports existing research. Pellegrini and Smith (1998) [25] noted that physical play is vital for social and emotional development, offering children experiences that

promote teamwork and positive attitudes toward physical activity. This finding suggests that incorporating hopscotch into physical education curricula could enhance children's social skills while promoting fitness.

In terms of perceived challenges, pre-service teachers identified significant barriers, with an overall mean score of 4.07. Notably, time constraints in the curriculum (M = 4.56) and insufficient training in physical fitness education (M=4.37) emerged as the most pressing issues. This finding corroborates the work of Brusseau *et al*. (2016) [6], who highlighted that limited instructional time and inadequate teacher training significantly hinder the delivery of effective physical education in schools. Additionally, the perception that a lack of interest from pupils (M = 4.33) poses a challenge to promoting physical fitness is particularly alarming. Research by Graham (2018) [15] indicates that children's motivation to engage in physical activities is often influenced by their educational experiences. If educators are unable to foster a genuine interest in physical fitness activities, participation rates among pupils may decline, negatively impacting their health and development.

The analysis of gender differences in perceptions regarding physical fitness development indicated that male pre-service teachers had a mean score of 3.52, while female pre-service teachers scored slightly lower at 3.47. However, the statistical analysis (p = 0.717) showed no significant difference between genders. This suggests that both male and female pre-service teachers have comparable attitudes towards the importance of physical fitness in pupils. Previous research has indicated that gender may influence attitudes toward physical education, but the current findings align with studies by Kovalchik *et al*. (2019) [17], which demonstrated that gender does not significantly affect teachers' perceptions of physical education. This may indicate a growing recognition among pre-service teachers of the importance of physical fitness for all children, independent of gender. The findings are consistent with those of Beni *et al*. (2020), who found that educators, regardless of gender, are increasingly aware of the critical role of physical activity in fostering children's overall well-being.

The analysis also examined the relationship between perceptions and challenges in physical fitness development, revealing a strong negative correlation (R = -0.800, p = 0.000) between teachers' perceptions of hopscotch's benefits and the challenges encountered in implementing physical fitness activities. This indicates that as perceptions of hopscotch's positive influence increase, the challenges faced decrease. This relationship underscores the necessity of fostering positive perceptions among pre-service teachers regarding physical fitness to mitigate the challenges they face in promoting it. Lounsbery *et al*. (2013) [19] supports this finding, suggesting that enhancing teachers' perceptions of the benefits of physical activity can lead to increased implementation of physical education programmes. Therefore, addressing the challenges highlighted by pre-service teachers is crucial for leveraging the benefits of hopscotch and similar activities in promoting physical fitness.

Findings

The data analysis revealed that:

1. Pre-service teachers perceive hopscotch as a multifaceted tool that can enhance physical fitness, motor skills, and social interaction in pupils, with some variation in their beliefs about its broader and long-term benefits. The standard deviations indicate a general consensus among respondents, though a few items display more variation in opinions, such as hopscotch's role in promoting lifelong fitness habits.
2. The analysis suggests that a combination of curriculum, training, facilities, and cultural factors affects the ability of pre-service teachers to effectively promote physical fitness in pupils.
3. While males exhibit a marginally more positive perspective on the importance of physical fitness for pupils, the statistical analysis reveals that these differences are not significant.
4. This p-value exceeds the conventional threshold of 0.05 for statistical significance, indicating no significant differences in perceptions between male and female pre-service teachers regarding physical fitness development.

Conclusion and Recommendations

The integration of these findings reveals the complexities involved in promoting physical fitness programmes in early childhood education. While pre-service teachers exhibit positive perceptions of hopscotch as a tool for physical fitness development, the perceived challenges, especially concerning time and training may hinder effective implementation. Addressing these challenges is essential for educators to fully realize the benefits of such activities. McKenzie *et al*. (2019) [20] argue for the importance of professional development aimed at enhancing pre-service teachers' understanding of engaging physical education strategies. Educational institutions can foster an environment that promotes physical fitness and encourages positive attitudes toward physical activity among pupils by equipping teachers with the necessary skills and knowledge to implement enjoyable activities like hopscotch. The following recommendations are made:

1. Curriculum Developers should integrate hopscotch into physical education curricula to leverage its multifaceted benefits for enhancing physical fitness and social interaction among pupils.
2. Educational Administrators should revise the curriculum to allocate adequate time for physical fitness activities and ensure that pre-service teachers receive comprehensive training in physical fitness education.
3. Teacher Training Institutions should implement gender-inclusive strategies in training programmes to emphasize the importance of physical fitness for all children, addressing any perceptual biases.
4. Faculty and Trainers should facilitate joint workshops for male and female pre-service teachers to foster collaboration and a shared understanding of physical fitness education.

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