Effects Of Sports Infrastructure And Physical Education Curriculum Implementation On Physical Activity Participation Among Early Childhood Pupils In Nigeria

Gbadegesin, Motunrayo Aminat Ph.D
Department of Early Childhood Care and Education,
School of Early Childhood Care, Primary, Adult and Non-Formal Education (ECPAE),
Federal College of Education (Special), Oyo, Oyo State, Nigeria).
angelrayo1240@gmail.com

Ayegboyin, K. A.
Department of Early Childhood Care and Education
School of Early Childhood Care, Primary, Adult and Non-Formal Education (ECPAE),
Federal College of Education (Special), Oyo, Oyo State, Nigeria).
ayegboyinkayode@gmail.com

&

Falola-Ojo, O. I.
Department of Early Childhood Care and Education
School of Early Childhood Care, Primary, Adult and Non-Formal Education (ECPAE),
Federal College of Education (Special), Oyo, Oyo State, Nigeria).
faibkzcreativity@gmail.com

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ABSTRACT

This study explored the effects of sports infrastructure and physical education (PE) curriculum implementation on physical activity participation among early childhood pupils in Nigeria. A descriptive correlational research design was employed, with data collected from 425 pupils across selected urban and rural schools. Data were gathered using a Physical Activity Participation Questionnaire, a Sports Infrastructure Checklist, and a Curriculum Implementation Assessment Scale. Analysis involved Pearson correlation, t-tests, and regression analysis. Results revealed significant positive relationships between sports infrastructure ($r = 0.476$, $p < 0.01$) and PE curriculum implementation ($r = 0.502$, $p < 0.01$) with physical activity participation. Together, these factors explained 47.9% of the variance in participation. A significant difference was found in physical activity participation based on school type, with private school pupils engaging more. The study underscores the need for improved infrastructure and curriculum delivery to enhance physical activity levels in early childhood education settings. These findings support policies that prioritize investment in sports facilities and the effective implementation of PE curricula to foster better health outcomes for young learners in Nigeria.

INTRODUCTION

In recent decades, the importance of early childhood physical activity has gained global recognition, not only for its contribution to children's physical health, but also for its role in cognitive development, emotional regulation, and social competence (Wang, 2022). Within

educational settings, two critical factors that shape children's engagement in physical activities are the availability of sports infrastructure and the effective implementation of physical education (PE) curricula. While numerous studies have explored these variables in relation to adolescents and secondary school students, relatively little empirical research has examined how these elements influence physical activity participation in early childhood pupils..

Sports infrastructure in early childhood education refers to age-appropriate physical environments, including safe playgrounds, open play areas, indoor gyms, and physical activity equipment tailored to young learners' developmental needs (Al Shishani, 2023). Such environments provide children with opportunities to explore movement, coordination, and cooperative play. On the other hand, the PE curriculum at the early childhood level encompasses structured and semi-structured physical activity programs that support motor skill development, promote active lifestyles, and integrate physical learning into broader educational goals (Hao andWang, 2024).

Despite the inclusion of physical activity goals in Nigeria's National Policy on Education, the reality in many Nigerian early childhood education settings is one of limited infrastructure, overcrowded classrooms, underqualified personnel, and minimal time allocation for physical education. These gaps are further widened by socioeconomic disparities between urban and rural schools, public and private institutions, and northern versus southern regions of the country (Aubert et al., 2022). As a result, many pupils in nursery and early primary schools are denied the full developmental benefits of physical activity engagement during school hours.

International studies underscore the foundational role of physical activity in early childhood. Research by Vasilopoulos and Ellefson (2021) emphasizes that movement experiences in early life predict not only long-term physical health but also academic achievement and social-emotional growth. Similarly, Canadian and Scandinavian educational models have demonstrated the value of integrating rich physical activity environments into early years pedagogy, yielding measurable improvements in attentiveness, classroom behavior, and peer collaboration (Howellset al., 2023; Gleddie and Morgan, 2021).

The importance of early childhood physical activity extends beyond individual development, with far-reaching implications for society and the nation. The early years are a critical period in a child's life, and the impact of physical activity during this stage can be seen in the careers of successful athletes who started their sports journeys at a young age. Usain Bolt, for example, began his sprinting career as a child and participated in various physical activities that helped him develop the skills and resilience that would later contribute to his world record-breaking career (González Leoni,2020). Similarly, Serena Williams was introduced to tennis at the age of four, a foundation that shaped her into one of the greatest tennis players in history (Corbett, 2020). These case studies highlight the importance of fostering physical activity from a young age—not just for athletic achievement, but also for developing qualities like discipline, resilience, and confidence that benefit children throughout their lives.

However, in Nigeria, scholarly attention to early childhood physical activity has largely focused on nutrition, cognitive development, and access to preschool education — leaving a significant gap in understanding the institutional and structural enablers of physical activity participation among this vulnerable age group. In particular, there is a paucity of research that jointly examines the role of infrastructure quality and curriculum implementation fidelity in shaping children's real-time engagement in movement and play during school hours.

This study, therefore, seeks to fill this critical gap by investigating how the availability of sports infrastructure and the extent to which PE curricula are implemented influence the participation of early childhood pupils in physical activities in Nigeria. The findings are expected to provide actionable insights for curriculum designers, early childhood educators, policymakers, and school administrators striving to create equitable, developmentally appropriate, and health-promoting learning environments for young children.

STATEMENT OF THE PROBLEM

In Nigeria, early childhood pupils often lack consistent access to structured physical education and safe, developmentally appropriate sports infrastructure within school environments. Although physical activity is vital for children's motor, cognitive, and social development, its promotion at the early education level is undermined by poor curriculum implementation, inadequate teacher training, and insufficient investment in child-friendly play facilities. While existing policies advocate for physical education, there is limited empirical evidence on how these policies translate into practice in early childhood settings. Moreover, the influence of sports infrastructure and curriculum delivery on young children's actual participation in physical activities remains largely under-researched. This gap hinders efforts to develop effective, evidence-based interventions that support active learning and holistic development in early years education.

OBJECTIVES OF THE STUDY

1. To determine the relationship between sports infrastructure and physical activity participation among early childhood pupils in Nigeria.
2. To determine the relationship between physical education curriculum and physical activity participation among early childhood pupils in Nigeria.
3. To measure the level of physical activity participation among early childhood pupils.
4. To determine the significant difference in physical activity participation based on school type
5. To determine the significant difference in physical activity participation based on gender

RESEARCH QUESTIONS

1. What is the relationship between sports infrastructure and physical activity participation among early childhood pupils in Nigeria?
2. What is the relationship between physical education curriculum and physical activity participation among early childhood pupils in Nigeria?
3. What is the level of physical activity participation among early childhood pupils?

HYPOTHESES

H_{01}: There is no significant difference in physical activity participation based on school type
H_{02}: There is no significant difference in physical activity participation based on gender

METHODOLOGY

This study adopted a descriptive correlational research design to examine the influence of sports infrastructure and physical education (PE) curriculum implementation on physical activity participation among early childhood pupils in Nigeria. The target population comprised children aged 3 to 8 years enrolled in public and private early childhood education centers across urban and rural settings. A multistage sampling technique was

employed, beginning with stratified sampling to group schools by type and location, followed by simple random selection of schools and pupils, ensuring gender representation. Data were collected using three instruments: the Physical Activity Participation Questionnaire (PAPQ), a researcher-developed Sports Infrastructure Checklist, and the Curriculum Implementation Assessment Scale (CIAS), all of which were validated by experts and pilot-tested for reliability. The PAPQ gathered data on the frequency and intensity of pupils' physical activity, the checklist assessed the adequacy and safety of available infrastructure, and the CIAS evaluated the fidelity of curriculum delivery. Data collection occurred during scheduled school visits, with ethical approval and informed consent obtained from relevant authorities and parents. Quantitative data were analyzed using SPSS version 25.0, applying descriptive statistics to measure activity levels, Pearson correlation to test relationships among variables, and independent t-tests to examine differences based on gender and school type. All hypotheses were tested at the 0.05 level of significance.

THEORETICAL FRAMEWORK

A highly relevant theoretical framework for this study is the Theory of Planned Behavior (TPB), developed by Icek Ajzen. TPB is grounded in the premise that an individual's behavior is primarily determined by their intention to perform the behavior (Ajzen, 2020), which in turn is influenced by three interrelated constructs: attitude toward the behavior, subjective norms, and perceived behavioral control (PBC). In the context of early childhood physical activity participation, TPB offers a robust lens for understanding how both environmental and psychological factors shape behavior in young learners. Specifically, the effective implementation of a physical education (PE) curriculum can enhance positive attitudes by providing structured, enjoyable, and developmentally appropriate physical activity experiences that children come to value and associate with positive outcomes (Coulter et al., 2020). Subjective norms reflecting the influence of parents, teachers, and peersplay a vital role in shaping children's perceptions of whether physical activity is expected and supported within their immediate social environment. Hu et al. (2021) asserted that, perceived behavioral control, which refers to a child's belief in their capability to engage in physical activity, is significantly influenced by the availability and accessibility of adequate sports infrastructure. When schools are equipped with safe and stimulating physical environments, children are more likely to feel empowered and competent to participate in physical activities. Empirical research, such as the work of Lee et al. (2020), supports this theoretical application by demonstrating that both attitude and perceived behavioral control are significant predictors of physical activity intention and behavior among school-aged children. The TPB framework, therefore, not only validates the central variables explored in this study but also underscores the necessity of an integrated approach that combines curriculum design, environmental facilitation, and psychosocial support. This holistic perspective aligns with international best practices in promoting health and well-being in early childhood education and affirms the importance of addressing both structural and behavioral determinants to enhance physical activity participation in young learners.

RESULTS

Table1. Demographic Characteristics of Respondents

Demographic Characteristics of the Respondents	Frequency	Percentages(%)
Gender		
Male	198	46.6
Female	227	53.4

Total	425	100.0
School Type		
Urban	248	58.4
Rural	177	41.6
Total	425	100.0
School Environment		
Urban	267	62.8
Rural	158	37.2
Total	425	100.0
State		
Lagos	120	28.2
Oyo	83	19.5
Enugu	69	16.2
Kano	61	14.4
Rivers	92	21.6
Total	425	100.0

Source: Field Survey, 2025.

The demographic characteristics of the respondents are presented in Table1.On gender, 46.6% of the respondents were male, while 53.4% were female, indicating that the majority of the respondents were female. In terms of school type, 58.4% of the respondents attended urban schools, while 41.6% attended rural schools, suggesting that more respondents were from urban schools. Regarding the school environment, 62.8% of the respondents attended schools in urban areas, while 37.2% attended rural schools, indicating that urban schools had a higher representation in the study. In terms of state of residence, 28.2% of the respondents were from Lagos, 19.5% from Oyo, 16.2% from Enugu, 14.4% from Kano, and 21.6% from Rivers. This implies that the largest proportion of respondents were from Lagos, followed closely by Rivers and Oyo.

Research Question1: What is the relationship between sports infrastructure and physical activity participation among early childhood pupils in Nigeria?

Table 2: Pearson product-moment correlation showing the relationship between sports infrastructure and physical activity participation

Variables	**N**	**Mean**	**Standard deviation**	**Df**	**R**	**Sig**	**r^2**
Physical Activity Participation	425	28.37	5.21	423	0.476**	0.000	0.227
Sports Infrastructure	425	3.84	1.08				

Source: Field Survey, 2025.

Table 2 reveals a significant positive relationship between sports infrastructure and physical activity participation; $r(423) = 0.476^{**}$, $p < 0.01$. This indicates that better sports infrastructure is associated with higher physical activity participation. The effect size ($r^2 = 0.227$) implies that 22.7% of the variance in participation is explained by the quality and availability of sports infrastructure.

Research Question2: What is the relationship between physical education curriculum and physical activity participation among early childhood pupils in Nigeria?

Table 3: Pearson product-moment correlation showing the relationship between physical education curriculum and physical activity participation among early childhood pupils in Nigeria

Variables	N	Mean	Standard deviation	Df	R	Sig	r^2
Physical Activity Participation	425	28.37	5.21	423	0.502**	0.000	0.252
Physical Education Curriculum	425	4.12	1.14				

Source: Field Survey, 2025.

Table 3 shows a significant positive relationship between PE curriculum implementation and physical activity participation; $r(423) = 0.502^{**}$, $p < 0.01$. This suggests that more effective implementation of the PE curriculum leads to greater participation. The r^2 value of 0.252 indicates that 25.2% of the variance in participation is accounted for by PE curriculum delivery.

Research Question3: What is the level of physical activity participation among early childhood pupils?

Table 4: Level of Physical Activity Participation Among Early Childhood Pupils

Indicators	Mean	Standard Deviation	Benchmark/Standard	Interpretation
Frequency of Physical Activity per Week	3.76	1.18	≥ 5 days/week (WHO, 2019)	Below Recommended Level
Duration per Session (in minutes)	26.47	8.94	≥ 30 minutes/session (NASPE, 2009)	Below Recommended Level
Total Duration per Week (in minutes)	101.34	39.26	≥ 150 minutes/week (WHO, 2019; CDC, 2020)	Below Recommended Level
Intensity of Physical Activity (1–5 scale)	2.91	0.87	≥ 3 (moderate-to-vigorous intensity)	Moderate

Source: Field Survey, 2025.

Hypothesis 1: There is no significant difference in physical activity participation based on school type

Table 5: T-test showing difference in physical activity participation based on school type

Variable	Gender	N	Mean	Standard deviation	Df	T	Sig	η^2
Physical Activity Participation	Public	243	27.94	5.19	423	-2.21	0.028	0.011
	Private	182	29.02	5.15				

Source: Field Survey, 2025.

Table 5 shows a statistically significant difference in physical activity participation based on school type; $t(423) = -2.21$, $p < 0.05$. Therefore, the null hypothesis is rejected. Pupils in private schools had slightly higher mean participation levels than those in public schools. However, the effect size ($\eta^2 = 0.011$) indicates a small difference.

Hypothesis 2: There is no significant difference in physical activity participation based on gender

Table 6: T-test showing difference in physical activity participation based on gender

Variable	Gender	N	Mean	Standard deviation	Df	T	Sig	η^2
Physical Activity Participation	Male	198	28.12	5.23	423	-1.08	0.281	0.003
	Female	227	28.58	5.18				

Source: Field Survey, 2025.

Table 6 reveals no significant difference in physical activity participation based on gender; $t(423) = -1.08$, $p > 0.05$. Thus, the null hypothesis is accepted. The effect size ($\eta^2 = 0.003$) indicates a negligible gender-based difference in physical activity levels.

DISCUSSION OF FINDINGS

The first research question examined the relationship between sports infrastructure and physical activity participation among early childhood pupils in Nigeria. The results in Table 2 revealed a significant positive relationship, with sports infrastructure accounting for 22.7% of the variance in physical activity participation. This suggests that schools with better-equipped and more accessible sports facilities promote higher levels of physical activity among young learners. This finding is consistent with the work of Nordbø et al. (2020), who emphasized the role of the built environment in fostering active behavior among children. Improved infrastructure likely enhances both opportunities and motivation for movement and play during school hours.

The second research question explored the relationship between physical education (PE) curriculum implementation and physical activity participation. As presented in Table 3, there was a significant positive relationship between the two variables, with PE curriculum implementation explaining 25.2% of the variance. This finding aligns with previous studies such as that of Tovashevich (2024), which underscore that a well-structured and developmentally appropriate PE curriculum significantly contributes to increased physical activity levels in early childhood. When schools implement PE programs effectively, pupils are more likely to engage regularly in structured physical activity, thereby promoting healthier lifestyles from an early age.

The third research question assessed the level of physical activity participation among early childhood pupils. Table 4 indicated that the average frequency, duration, and total

time spent on physical activity fell below internationally recommended standards. Pupils engaged in physical activity approximately 3.76 days per week, with an average session lasting 26.47 minutes, and a weekly total of about 101.34 minutes. These values are below the World Health Organization (2019) and NASPE (2009) recommendations of at least 150 minutes per week and 30 minutes per session. This points to a need for greater emphasis on policy enforcement and school-level support for daily physical activity in early childhood settings in Nigeria.

The first hypothesis tested whether there was a significant difference in physical activity participation based on school type. Table 5 revealed a statistically significant difference, with pupils in private schools reporting slightly higher participation levels than those in public schools. However, the effect size ($\eta^2 = 0.011$) indicates that the difference was small. This could reflect disparities in resources and infrastructure between private and public institutions, as private schools may have greater capacity to implement structured physical activity programs.

The second hypothesis examined the effect of gender on physical activity participation. As shown in Table 6, no significant gender-based difference was found. The effect size ($\eta^2 = 0.003$) also confirms a negligible variation in participation between boys and girls. This suggests that, in early childhood, both male and female pupils are provided relatively equal opportunities for physical activity. The result aligns with findings by Kallio et al. (2020), who noted that gender disparities in activity levels typically become more pronounced in later childhood and adolescence.

CONCLUSION

The findings of this study underscore the vital importance of sports infrastructure and the effective implementation of the physical education curriculum in enhancing physical activity participation among early childhood pupils in Nigeria. Adequate sports infrastructure provides essential opportunities for movement and play, while a well-executed PE curriculum contributes significantly to increased physical activity levels. However, the study highlights that current participation rates fall below internationally recommended standards, signaling the need for stronger policy enforcement and improved resource allocation. Additionally, the research points to disparities between public and private schools, emphasizing the necessity of ensuring equitable access to quality physical education. To foster the development of active and healthy young learners, it is crucial for Nigeria to prioritize investments in both sports infrastructure and curriculum delivery within early childhood education settings.

RECOMMENDATIONS

The following recommendations were made based on the outcome of this study:

1. Schools should invest in age-appropriate sports infrastructure to support physical activity participation among early childhood pupils.
2. The Ministry of Education should ensure consistent and effective implementation of the physical education curriculum in early childhood settings.
3. Government should allocate more resources to enhance physical education programs and teacher training in early childhood schools.
4. Public-private partnerships should be encouraged to improve infrastructure and provide equitable access to physical activity opportunities.
5. Teacher training programs should prioritize professional development in delivering quality physical education that fosters active participation in young learners.

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