

Play-Based Activities to Strengthen Gross Motor Skills in Five-Year-Old Kindergarten Students

Actividades lúdicas para fortalecer la motricidad gruesa en estudiantes de 5 años de kínder

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Abstract

Gross motor development is fundamental in early childhood education. Therefore, this research aimed to analyze the impact of the systematic implementation of play-based activities on the development of gross motor skills in five-year-old students from Kindergarten A at Innova Schools Callao-Lemos Educational Institution, Peru, during 2023. The study followed a descriptive action-research design with a sample of 25 students and 20 teachers, using checklists, surveys, and observation records. The results evidenced a progressive overcoming of initial motor difficulties, with a 40 percentage-point increase in the achieved level, with 90% of students reaching an outstanding achievement level. In addition, high teacher satisfaction and qualitative improvements in the socioemotional domain were recorded. It is concluded that the use of play-based activities is an effective pedagogical strategy for enhancing comprehensive development in early childhood.

Keywords:

Play-based activities; Motor development; Early childhood education; Gross motor skills; Psychomotricity

Resumen

El desarrollo de la motricidad gruesa es fundamental en la educación inicial. Es por ello que esta investigación tuvo como objetivo analizar el impacto de la implementación sistemática de actividades lúdicas en el desarrollo de la motricidad gruesa de estudiantes de 5 años del aula de kínder A de la Institución Educativa Innova Schools Callao-Lemos, Perú durante el año 2023. El estudio siguió un diseño descriptivo de investigación-acción con una muestra de 25 estudiantes y 20 docentes, con el uso de listas de cotejo, encuestas y registros de observación. Los resultados evidenciaron una superación progresiva de las dificultades motoras iniciales, con un incremento de 40 puntos porcentuales en el nivel logrado, donde el 90 % de los alumnos alcanzó logro destacado. Además, se registró alta satisfacción docente y mejoras cualitativas en el ámbito socioemocional. Se concluye que, la aplicación de actividades lúdicas constituye una estrategia pedagógica efectiva para potenciar el desarrollo completo en la primera infancia.

Palabras clave:

Actividades Lúdicas; Desarrollo Motor; Educación Inicial; Motrices gruesas; Psicomotricidad

INTRODUCTION

Motor development in early childhood is a fundamental pillar of human development, as it lays the foundations for the acquisition of physical, cognitive, and socioemotional skills that consolidate throughout life. Gross motor skills, understood as the body's ability to execute coordinated movements through the use of large muscle groups, enable children to explore their environment, develop autonomy, and strengthen bodily identity (Arroyo, 2024). In this context, Banda et al. (2025) highlight that play-based activities have been recognized as effective pedagogical strategies for stimulating motor development, as they integrate movement with cognitive and emotional processes that foster meaningful learning. The relevance of these practices, according to León et al. (2024), is supported by improvements in coordination, balance, and muscular strength when systematically implemented in educational settings.

In line with the above, Flores and Sánchez (2024) argue that psychomotricity has evolved from a corrective conception to an approach that links the body, mind, and emotions, thereby transforming its role in early childhood education. This perspective is supported by Moreira and Mestre (2023), who recognize that every motor action is related to thought and emotions, making movement the basis of intelligence and a determining factor for the development of higher mental functions such as attention, memory, and thinking. Likewise, Pastrana et al. (2024) emphasize that gross motor skills influence the acquisition of body schemas and children's ability to perform basic daily functions, reflecting their importance in building child autonomy.

On the other hand, play has been identified by Quiroz (2024) as a pedagogical tool of high value for modeling behavior and strengthening psychomotor skills in early childhood education, as it facilitates social interaction, emotional development, and the construction of values necessary for coexistence. Contemporary theories on play highlight its ability to promote physical, cognitive, and creative development, as well as to foster conflict resolution through play-based activities that generate meaningful learning (Rimascca et al., 2025). In this regard, León et al. (2024) argue that both free and structured play have

demonstrated effectiveness in improving gross motor skills, although free play offers additional benefits derived from its spontaneous and adaptive nature.

Additionally, León et al. (2020) acknowledge the need to incorporate active methodologies in early childhood education to motivate children to learn and enhance their comprehensive development, leading to the implementation of strategies such as role-playing, collaborative learning, and gamification. These methodologies, supported by educational technologies and interactive platforms, have shown a positive impact on children's cognitive, emotional, and academic development by promoting more motivating and effective learning (Buendía et al., 2025). However, the need has been identified to adapt these tools to the cultural and educational characteristics of each context, as well as to adequately train educators to implement them properly.

Likewise, research on play has shown that its relevance is not universal, as its valuation and practice vary across cultural contexts and educational experiences within each region (Courtois et al., 2024). Within this framework, play-based activities, when appropriately applied, have a significant impact on the motor development of four-year-old children by improving fine and gross motor skills. Chisag et al. (2024) concur by highlighting that play positively influences various cognitive dimensions, activating memory, stimulating attention and concentration, fostering creativity, and providing opportunities for the development of higher cognitive skills.

Despite theoretical and empirical advances, at Innova Schools Callao-Lemos Educational Institution, a high percentage of five-year-old students were identified as having difficulties in gross motor development, limiting their ability to perform coordinated movements and affecting their performance in daily activities. This situation was attributed to a lack of systematic motor stimulation, inadequate play spaces, and limited incorporation of play-based activities into regular pedagogical practice. The ideal situation required children to achieve an optimal level of motor development appropriate to their age, which implied the implementation of effective and sustained pedagogical strategies. In this context, the research

question arose: What is the impact of systematically implementing play-based activities on the development of gross motor skills in five-year-old students?

A study addressing this question would strengthen pedagogical practices in early childhood education by providing empirical evidence on the effectiveness of play-based activities as a strategy to enhance motor development. This type of research is essential for guiding decision-making in the educational field, offering methodological alternatives that address children's comprehensive developmental needs and can be replicated in similar contexts. Furthermore, the study contributes to knowledge about the relationship between play and psychomotor development, enriching the field of early childhood education and strengthening teacher training. Therefore, the objective of this research was to analyze the impact of the systematic implementation of play-based activities on the development of gross motor skills in five-year-old students from Kindergarten A at Innova Schools Callao–Lemos Educational Institution during 2023.

METHODOLOGY

The study was conducted under a descriptive design with an action-research approach, selected for its relevance in simultaneously analyzing the application of play-based activities and the development of gross motor skills, while proposing a practical solution within the school context. This approach integrated inquiry into pedagogical practice, generated applicable classroom knowledge, and facilitated the incorporation of continuous improvement into educational processes. Moreover, it ensured that the research went beyond describing phenomena to promote concrete transformations in teaching and learning dynamics, with a direct impact on child development.

The institutional context was a private school in the urban area of Callao, with an approximate student population of 900 and adequate infrastructure for psychomotor activities. From this population, a sample of 25 five-year-old students from Kindergarten A at Innova Schools Callao–Lemos Educational Institution was selected through non-probabilistic intentional convenience sampling. The group included 15 boys and 10 girls, all enrolled in early childhood education during the

2023 academic year. Additionally, the participation of 20 teachers and administrators in awareness-raising activities was considered, incorporating the perspectives of educational stakeholders into the program implementation process.

Data collection instruments included checklists applied in each learning session to assess gross motor skills, with categories of outstanding achievement, achieved, in process, and initial. Structured surveys were also administered to teachers and administrators using a five-point Likert scale with ten items addressing knowledge of motor difficulties, use of play-based activities, perceptions of their effectiveness, and willingness to innovate in pedagogical practice. Complementarily, observation records prepared by the classroom teacher and support teacher were used to document progress, difficulties, and behavioral changes, along with post-workshop satisfaction evaluations, providing a comprehensive view of the process and its effects.

The procedure was organized into four phases. The first phase corresponded to diagnosis, involving the administration of instruments to students and teachers, the analysis of prior assessments, and the establishment of a baseline. The second familiarization phase included presentation of the project to the educational community, a teacher awareness workshop, and introductory sessions with students. The third execution phase consisted of implementing 12 learning sessions with play-based activities designed to stimulate gross motor skills through motor and sensorimotor games adapted to children's characteristics. The fourth control phase focused on data tabulation and analysis, comparison with initial measurements, and formulation of conclusions regarding program effects.

Data analysis combined quantitative and qualitative techniques. In the quantitative component, descriptive statistics (percentages), pre- and post-intervention comparisons, and distribution analyses by achievement categories were applied to determine the magnitude of change. In the qualitative component, behavioral observations, levels of participation, student motivation, and teacher satisfaction, as recorded in surveys, were analyzed. Source triangulation allowed numerical results to be contrasted with qualitative information,

strengthening the validity and reliability of findings and ensuring a comprehensive understanding of the effects of play-based activities on gross motor development.

RESULTS

The following section presents the findings from the program implementation process, organized by initial diagnostic indicators, the evolution of student achievement, the distribution of final performance categories, teacher evaluations of the proposal, and the effects of different types of play on child development. The information illustrates quantitative advances in gross motor skills and qualitative transformations in the socioemotional dimension, offering an overall view of the impact of play-based activities in the studied educational context.

As shown in Table 1, the initial diagnosis indicated that 70% of students presented motor difficulties, evidencing a high proportion of children with limitations in gross motor skill development. The remaining 30% did not show difficulties but required strengthening actions to prevent delays. Regarding pedagogical practice, only 10% of teachers applied play-based activities systematically, 50% incorporated them occasionally, and 40% did not include them in their classes. Despite this low frequency of use, 64% of teachers expressed a positive perception of the effectiveness of play-based activities. These results indicated the need to align teaching practice with students' motor needs and with teachers' favorable valuation of play-based methodologies.

Table 1. Initial diagnostic results: teacher perceptions of motor difficulties and use of play-based activities

Assessed Aspect	Percentage	Interpretation
Students with identified motor difficulties.	70 %	Significant evidence of limitations in gross motor skills.
Students without difficulties but requiring strengthening.	30 %	Preventive need for motor stimulation.
Teachers who apply play-based activities systematically.	10 %	Limited use of play-based strategies in regular sessions.
Teachers who include play-based activities occasionally.	50 %	Intermittent application without systematic planning.
Teachers who do not include play moments.	40 %	Prioritization of non-play-based methodologies.
Teachers who consider play-based activities effective	64 %	Positive perception of play-based methodologies' potential

After program implementation, results on the evolution of achievement indicators, as shown in Table 2, indicated a positive, steady progression in motor skill development. In Session 1, 55% of students reached the achieved level, 25% were in process, and 20% remained at the initial level. By Session 6, the achieved level increased to 65%, the in-process level decreased to 20%, and the initial level decreased to 15%. This trend was consolidated in Session 12, where 80% of students achieved objectives, only 15% were in process, and 5%

remained at the initial level. This evolution represents an overall improvement of 40 percentage points, increasing from 40% initial mastery to 80% at the end of the intervention. These figures indicate that the systematic application of play-based activities produced a direct, measurable impact on overcoming motor difficulties identified in the diagnosis, with most of the group acquiring the target competencies.

Table 2. *Evolution of achievement indicators during program implementation*

Session	Levels		
	Initial (%)	In Process (%)	Achieved (%)
1	20	25	55
6	15	20	65
12	5	15	80
Overall improvement	From 40% initial to 80% final		
Net increase	40 percentage points		

At the end of the program, student distribution showed a predominance of the Outstanding Achievement category, with 90% of the group (23 children) achieving it. Two students (8%) were in the Achieved category, and none remained in process or initial levels. These results confirmed a significant advance in the development of targeted competencies, as the entire group surpassed initial levels and reached satisfactory performance. The high concentration at the highest level reflects the effectiveness of implemented play-based activities and evidences that the methodological proposal strongly strengthened students' motor and cognitive skills. This finding supports consolidating the strategy as a sustained pedagogical practice with potential for replication in other educational contexts seeking to promote comprehensive learning from early childhood.

Regarding teacher awareness workshops, a very high satisfaction level was obtained, as shown in Table 3. Ninety-five percent of participants stated that the experience fully met their expectations and expressed total conviction regarding the relevance of play-based strategies. Likewise, 90% recognized the importance of strengthening gross motor skills through play, confirming coherence between the methodological proposal and student needs. Regarding willingness to implement the methodology, 85% expressed openness to incorporating it into their pedagogical practice, and 88% considered its application feasible within the institutional context. These findings indicate that the workshop was highly effective in modifying teacher perceptions and dispositions, establishing a solid foundation of support and motivation for systematic adoption of play-based activities, which is crucial for the program's future sustainability.

Table 3. *Teacher awareness workshop satisfaction results*

Satisfaction Indicator	Percentage	Level
Workshop fully met expectations	95 %	Very High
Total conviction regarding play-based strategies	95 %	Very High
Relevance of strengthening gross motor skills through play	90 %	High
Willingness to implement proposed methodology	85 %	High
Perceived applicability in institutional context	88 %	High

Furthermore, different types of play generated positive effects on student development, as presented in Table 4. Motor play achieved 92% active participation and consolidated basic skills such as coordination, balance, laterality, and body schema. Sensorimotor play recorded 95% active participation and favored sensory integration, muscular strength, and coordination, in addition to generating greater interest and enjoyment, strengthening social interactions. Combined

activities achieved 88% sustained participation and promoted comprehensive psychomotor development, as evidenced by freedom of expression, overcoming fear, and respect for turn-taking. These findings confirm that the diversity of games stimulated multiple dimensions of motor development and strengthened socioemotional skills, highlighting the need for balanced planning to ensure comprehensive learning.

Table 4. *Specific effectiveness by type of play implemented*

Type of Play	Developed Skills	Participation Level	Observed Improvement
Motor play	Coordination, balance, laterality, body schema	92 % active participation	Significant consolidation of basic skills
Sensorimotor play	Sensory integration, muscular strength, coordination	95 % active participation	Greater interest and enjoyment; improved social interactions
Combined activities	Comprehensive psychomotor development	88 % sustained participation	Free expression, reduced fear, respect for turn-taking

Qualitative socioemotional development indicators also showed consistent advances across dimensions, as shown in Table 5. Motivation and participation remained constant throughout sessions, strengthening personal confidence. Body expression expanded with greater freedom of movement and creativity. In social interaction, children improved respect for turn-taking and appreciation of diverse opinions, fostering a broader

understanding of human diversity. Emotional regulation was reflected in reduced irritability during motor activities and decreased motor anxiety. Additionally, body self-esteem was consolidated through increased confidence in physical abilities, promoting a positive motor self-concept. These evidences confirm that the play-based proposal strengthens motor development and positively impacts the socioemotional dimension.

Table 5. *Observed qualitative socioemotional development indicators*

Assessed Aspect	Observed Evidence	Identified Impact
Motivation and participation	Constant maintenance across sessions	Strengthened personal confidence
Body expression	Greater freedom of movement and creative expression	Development of positive body identity
Social interaction	Improved respect for turn-taking and diverse opinions	Understanding of human diversity
Emotional regulation	Reduced irritability during motor activities	Decreased motor anxiety
Body self-esteem	Greater confidence in physical abilities	Development of positive motor self-concept

DISCUSSION

Study results showed that 70% of students presented motor difficulties at the beginning of the intervention, limiting comprehensive child development. This issue aligns with findings by Quimís et al. (2025), who identified low coordination, balance, and muscular strength in children aged 4–5 years, which were directly associated with sedentary lifestyles and a lack of opportunities for motor play. Complementarily, Quirola et al. (2024) reported that 67% of the evaluated children experienced difficulties with activities such as walking in a straight line or throwing a ball, attributed to insufficient stimulation and reduced physical space. The convergence of these initial diagnoses reflects a common concern across educational contexts regarding insufficient motor development in early childhood, underscoring the need for early corrective strategies.

In response, the systematic implementation of a play-based activity program produced progressive and significant improvements in students' motor achievement indicators. These findings are supported by Chávez et al. (2023), who reported significant improvements in gross motor development among two-year-old children following a four-week coordination play program. Similarly, Mera et al. (2022) demonstrated that an eight-week play-based motor stimulation program significantly increased gross motor development in schoolchildren, reducing the percentage performing below age expectations. The consistency of results corroborates the effectiveness of structured play-based interventions in overcoming motor difficulties across ages and contexts.

High active and sustained participation observed during sessions with different play types confirms these activities' potential to capture children's interest and engagement. Suarez (2025) concluded in a systematic review that didactic games generate positive effects on gross and fine motor skills while increasing participation and self-esteem among preschoolers. Lapo et al. (2025) similarly highlight the potential of play-based activities to personalize learning and adapt to individual needs while improving cognitive, social, and emotional skills. High engagement facilitates acquisition and consolidation of motor

competencies, as documented in this study.

Teachers' valuation of the play-based methodology and their willingness to implement it reflect a crucial perceptual shift toward sustainability. Peña et al. (2025) emphasize that effective integration of play as a pedagogical tool requires teacher training adapted to the context. Quiroz (2025) adds that the undervaluation of play practices and the lack of teacher training pose significant challenges, advocating for policies that integrate community knowledge and playful mediation training. The high satisfaction and conviction achieved in the awareness workshop establish a solid basis for overcoming these barriers.

Notably, qualitative advances in socioemotional development—such as increased personal confidence and improved social interaction—demonstrate benefits extending beyond motor dimensions. Mwinsa and Dagada (2025) identified that play-based learning strengthens social skills such as resilience, self-esteem, cooperation, and respect, promoting holistic development. These findings align with the present study, reinforcing play-based activities as a vehicle impacting motor, social, and emotional development simultaneously.

The program's effectiveness underscores the importance of adequate educational environments and trained supervision. Parraga and Zambrano (2023) caution that inappropriate environments and untrained guidance negatively impact motor development, highlighting that activities alone do not guarantee success without structural and professional conditions. This emphasizes the need for institutions to provide adequate physical spaces and ensure educator competence.

Continuous and specialized teacher training is also essential. Ávila and Cazarez (2024) found that insufficient early stimulation negatively affects cognitive, emotional, social, and physical development. Cedeño and Lescay (2024) advocate for validated recreational activities that foster socializing, education, and inclusivity. The consensus on teacher training as a cornerstone confirms that the success of play-based proposals largely depends on educator preparation and commitment.

Considering the post-pandemic context, the achieved advances gain greater relevance given

evidence of motor development deficits during this period. Vélez and Triviño (2022) found that after virtual education, children exhibited only barely acceptable gross motor development, and recommended specific strengthening actions. Caiza et al. (2023) documented the effects of the pandemic on motor skills and balance, and designed a play-based strategy guide that promoted comprehensive development through teamwork. The intervention aligns with efforts to counteract pandemic effects and demonstrates effectiveness in recovery and enhancement of motor development.

Regarding comprehensive development, results confirm that well-planned play-based activities promote simultaneous advances across multiple child dimensions. Lapo et al. (2025) noted play's potential to personalize learning and improve cognitive, social, and emotional skills, though designing activities fostering comprehensive development remains challenging. Balanced planning of motor, sensorimotor, and combined games, as implemented here, enabled consolidation of basic physical skills, free expression, reduced motor anxiety, and strengthened body self-esteem, achieving a multifaceted impact.

Overall, the program's high effectiveness and concentration of students at the outstanding achievement level support consolidating this strategy as a sustainable and replicable pedagogical practice. Quiroz (2025) emphasizes intercultural policies that integrate community knowledge, teacher training, and partnerships to incorporate traditional games into early childhood education. Teachers' perception of applicability and robust results indicate replicability in other contexts, with necessary adaptations, contributing significantly to promoting comprehensive learning from early childhood.

CONCLUSIONS

The study found that the systematic implementation of play-based activities produced a positive, quantifiable impact on the development of gross motor skills in five-year-old students. Results confirm a progressive overcoming of motor difficulties identified in the initial diagnosis, with a net increase of 40 percentage points in the achieved level, rising from 40% to 80% by the final session. The final distribution, with 90% of students achieving outstanding results, validates the

effectiveness of the applied methodology. Qualitative advances in socioemotional development were also observed, including increased personal confidence, improved social interaction, and a more consolidated sense of body self-esteem.

These findings indicate that systematic play-based activities constitute an effective pedagogical resource for motor development and facilitate child well-being. High teacher satisfaction and willingness to implement the methodology demonstrate its viability and acceptance within the institutional context. As recommendations, institutionalizing play-based activities as a regular pedagogical practice within the early childhood curriculum is proposed. Designing a continuous teacher-training program focused on planning and evaluating these strategies is also a priority. Furthermore, replicating the intervention across other grades and contexts is recommended to validate scalability, as well as incorporating families into the process to strengthen home-school collaboration in children's motor development.

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