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| RESEARCH ARTICLE

Investigating How Play Behavior Influences Motor Skills in Preschoolers

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| ABSTRACT
This study explored the correlation between the level of play behavior and the level of motor skills of preschoolers. A quantitative approach was used, which included a random sampling of one hundred (100) preschoolers selected from Crossing Bayabas Developmental Center 2, Davao City, Philippines, school year 2024-2025, as assessed by three (3) teachers. The data was gathered using the ECCD Checklist. The motor competencies which were balance, coordination, agility, and precision, among others, were evaluated with the preschoolers as the subjects of evaluation. Frequency counts and weighted mean were utilized to describe the demographic profile of the preschoolers and Pearson's correlation was used to evaluate the relationship between the level of play performed and the motor skills. The results demonstrated that the play behavior of the preschoolers does not significantly influence their level of gross motor skills with an r value of 0.175. But, does so with fine motor skills in a weak but impactful way, demonstrated by an r value of 0.375. The conclusion the research was able to arrive at was that play behavior impacts fine motor skill development, but with a lesser influence on gross motor skills development. Further investigation on the enduring effects of early play was suggested for future study.

| KEYWORDS

Early childhood education, play behavior, motor skills, Social Play, Play-Based Learning

| ARTICLE INFORMATION

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1. Introduction

Early childhood is a vulnerable period for the development of motor skills that are foundational to children's physical development, autonomy, and well-being. Recent research shows that play significantly influences this development. For instance, structured age-appropriate play programs involving parents can enhance both gross and fine motor skills in preschoolers (Cheraghi et al., 2021). Traditional games and free play alike have been shown to improve balance, manual dexterity, and overall motor competence, especially among children who initially demonstrate lower motor skills (Maulidiyyah et al., 2023). During recess, active games without equipment are particularly associated with better locomotor skills (Foweather et al., 2021). Even in virtual learning environments, teachers observe that motor play promotes focus, engagement, and social development (Ethridge et al., 2024). Finally, combining structured and unstructured playground activities can improve playground-specific motor skills and provide richer experiences than free play alone (Tortella et al., 2022).

According to Bone (2021), play is a manifestation of intentional state representations in consciousness, founded on children's existing knowledge as well as the learning from experience. Experimental data indicate that different kinds of play be it structured or free play, solitary or with others serve an essential role in building the motor functions, coordination, balance, and fine motor skills. According to Arhin (2023), play-based learning constitutes a significant component of early childhood education, providing children with a valuable and enjoyable means of exploring and learning about their world. Unlike conventional pedagogical approaches centered on rote memorization and drill-and-practice exercises, play-based learning

activities stimulate experiential engagement that fosters children's problem-solving capacity, creativity, and curiosity. It was through play activities such as running, jumping, climbing, and object manipulation that Filipino children learned the fundamental motor skills that readied them for daily tasks and classwork. The comparative impacts of the various play activities on the motor development of Filipino preschoolers have not yet been clearly understood, though. There was a need to examine how traditional Filipino games (e.g., patintero, sipa) and modern play activities influenced the development of gross and fine motor skills, including strength, coordination, and accuracy.

In the context of Philippine early childhood education, there has been increasing concern over the loss of play time due to a rising focus on academic readiness. With many schools placing more emphasis on formalized learning at the cost of play-based experiences, young children are being given less opportunity for physical engagement that can affect their motor skills acquisition (Hewes, 2006). This transition was a threat to the general development of Filipino children, as play, especially outdoor and active forms of play, was a focal aspect of their lives and cultural traditions.

Particularly in Crossing Bayabas Developmental Center 2, teachers have noted that preschoolers do not have playful interaction while participating in the classroom, particularly when teachers concentrate primarily on intellectual discussion. Some children are passive and would only participate on their own accord only if persuaded. From this observation, the researchers were interested in exploring this further, with a specific study on whether the play behavior of preschoolers is a significant determinant in the development of motor skills.

To this end, the present study sought to examine if the level of play among preschoolers is a substantial predictor of motor skill level. In pursuing the play-motor competency relationship in the local setting, the present study offered useful information to policymakers, caregivers, and educators. It offered evidence-based suggestions on the creation of play-based learning environments that fostered physical development and general well-being among young Filipino children. As such, the research aimed to promote and secure the perpetuation of play as a vital part of early childhood education in the Philippines so that Filipino children could acquire the fundamental motor skills essential to their future physical well-being, school readiness, and activities of daily living.

In illustrating the value of including diverse modes of play in early education, this study also sought to illustrate how culturally appropriate play activities could be used to enhance social relations, promote traditional values, and provide emotional resilience for young children. At a practical level, the addition of such game types as sungka or tumbang preso alongside contemporary playground activities could offer children greater confidence development and body competence, through the creation of an integrated model of learning that respected physical along with intellectual growth. This twin focus prepared children to succeed in their academic as well as social life, ready to reach their fullest growth from a holistic base.

2. Literature Review

Play behaviors in early childhood encompass a wide range of activities that can influence children's developmental outcomes, including reticent, solitary-passive, solitary-active, social, and rough play. Reticent behavior where children watch others without participating is often linked to social anxiety or lack of confidence, and may limit opportunities for practicing complex motor skills (Coplan & Armer, 2007). Solitary-passive play, such as quiet exploration of toys alone, can support concentration and object manipulation but may provide fewer chances to refine gross motor abilities (Rubin, 2001). In contrast, solitary-active play like running or building alone engages the child's body and promotes experimentation with movement (Walker, 2020). Social play, which includes cooperative and pretend play with peers, has been repeatedly shown to strengthen both motor coordination and social competence. For example, peer interactions during active games encourage adaptive motor responses and facilitate skill refinement through modeling and feedback (Pellegrini & Smith, 1998). Rough-and-tumble play, such as playful wrestling, is particularly associated with the development of strength, agility, and body awareness, though it is sometimes misunderstood as aggression rather than constructive physical engagement (Flanders et al., 2009).

Teachers' perceptions of preschoolers' motor skills provide important insights into children's readiness for formal schooling. Gross motor skills, such as running, jumping, and balancing, are foundational for physical competence and confidence in active play and sports (Adolph & Hoch, 2019). Fine motor skills like grasping small objects, drawing, and using tools are essential for self-care and early academic tasks. Research suggests that structured play interventions can improve both domains significantly (Cheraghi et al., 2021). Furthermore, children with richer and more varied play experiences tend to show higher levels of gross and fine motor proficiency compared to peers who engage primarily in sedentary or solitary play (Tan et al., 2020). Teachers'

observations of motor skills development are often considered reliable indicators, as educators witness children's performance across multiple settings and activities (Ginsburg, 2007). Together, these studies emphasize the critical role of diverse play experiences in supporting motor development during early childhood.

3. Methodology

This study employed a descriptive correlational research design to examine the relationship between preschool children's play behaviors and their motor skill development. The approach was chosen to allow systematic observation and analysis of naturally occurring behaviors without any intervention or manipulation. The Input-Process-Output (IPO) model served as the conceptual framework, guiding the exploration of how different types of play behaviors (inputs) are associated with motor skill competencies (outputs). The participants included 100 preschool children enrolled in a childcare center, their parents, and three preschool teachers who acted as key informants. Data collection instruments comprised two main tools: a Play Behavior Questionnaire and a Motor Skills Assessment. The Play Behavior Questionnaire, adapted from Coplan and Rubin (1988), included 30 items evaluating dimensions such as reticent behavior, solitary-passive play, solitary-active play, social play, and rough play. The Motor Skills Assessment consisted of 25 items 14 assessing gross motor skills and 11 focusing on fine motor skills based on the guidelines provided by the Council for the Welfare of Children and UNICEF Philippines (2011). Both instruments utilized a five-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). Teachers completed the questionnaires by rating each child's observed behaviors and skill proficiency over a designated observation period. Parental demographic surveys were also gathered to provide contextual information. The weighted mean of responses was computed and interpreted according to pre-established descriptive categories, enabling clear assessment of the prevalence of specific play behaviors and motor skill levels among the preschoolers.

4. Results and Discussions

Table 1. Level of Play Behavior of the Preschoolers in terms of Reticent Behavior

S/N	Indicators	WM	SD	Verbal Description
1	takes on the role of onlooker or spectator	4.06	0.34	High
2	wanders around aimlessly	4.06	0.34	High
3	watches or listens to other children without trying to join in	4.00	0.35	High
4	remains alone and unoccupied, perhaps staring off into space	4.02	0.32	High
	Aggregate Mean	4.04		High
	Aggregate Standard Deviation		0.34	

The data presented in Table 1 reveal that preschoolers displayed a high level of reticent play behavior, as reflected by the aggregate mean score of 4.04, with a relatively low aggregate standard deviation of 0.34, indicating consistency across teacher ratings. Specifically, the indicators show that children often took on the role of onlooker or spectator (WM = 4.06), wandered aimlessly (WM = 4.06), and watched or listened to peers without attempting to participate (WM = 4.00). Additionally, a high mean score was observed for children remaining alone and unoccupied (WM = 4.02). These findings suggest that many children in this group tended to engage in more observational and solitary behaviors rather than interactive play, despite being in a social setting. The implications are noteworthy for early childhood educators and caregivers. High levels of reticent behavior can signal either healthy self-regulation and observation skills or potential social withdrawal and low peer engagement, depending on context and frequency. Consistent solitary observation may limit opportunities to practice and refine gross and fine motor skills that typically develop through active social play, such as running, climbing, or cooperative games. This pattern underscores the importance of creating supportive, low-pressure environments that encourage shy or hesitant children to gradually participate in group activities.

Table 2. Level of Play Behavior of the Preschoolers in Terms of Solitary-Passive Behavior

S/N	Indicators	WM	SD	Verbal Description
1	plays by himself/herself, examining a toy or object	4.02	0.28	High
2	plays alone, building things with blocks and/or other toys	3.99	0.41	High
3	plays by himself/herself, drawing, painting pictures or doing puzzles	4.04	0.32	High
4	plays alone, exploring toys or objects, trying to figure out how they work	4.03	0.30	High
	Aggregate Mean	4.02		High
	Aggregate Standard Deviation		0.33	

The data presented in Table 2 show that preschoolers demonstrated a high level of solitary-passive play behavior, with an aggregate mean of 4.02 and an aggregate standard deviation of 0.33, reflecting relatively consistent teacher observations. Among the specific indicators, the highest weighted mean was for children who played by themselves drawing, painting, or doing puzzles (WM = 4.04), suggesting strong engagement in quiet, focused activities. Similarly, playing alone while exploring toys to understand how they work (WM = 4.03) and examining objects (WM = 4.02) were also highly rated. Even the indicator for building with blocks or toys alone (WM = 3.99) remained within the "High" category. These findings imply that the preschoolers were frequently inclined toward independent, reflective, and exploratory play activities, which can be developmentally beneficial for fostering concentration, problem-solving, and fine motor skills. However, consistently high solitary-passive play could also mean fewer opportunities for peer interaction, cooperative learning, and the development of social competencies, which are equally critical in early childhood. From an educational perspective, this pattern suggests the importance of balancing solitary play with guided social activities to ensure children develop not only cognitive and manipulative skills but also the ability to communicate, collaborate, and navigate group dynamics. Teachers might consider introducing small-group projects or paired activities that gently scaffold peer engagement while still honoring children's preference for focused, hands-on learning experiences.

Table 3. Level of Play Behavior of the Preschoolers in Terms of Solitary-Active Behavior

S/N	Indicators	WM	SD	Verbal Description
1	plays by himself/herself, engaging in simple motor activities (e.g., running, ringing bells/buzzers)	4.05	0.33	High
2	engages in pretend play by himself/herself	3.99	0.33	High
3	plays 'make-believe', but not with other children	4.02	0.38	High
4	plays alone in an active fashion, enjoying an activity solely for the physical sensation it creates	4.03	0.39	High
	Aggregate Mean	4.02		High
	Aggregate Standard Deviation		0.36	

The data in Table 3 indicate that preschoolers showed a high level of solitary-active play behavior, with an aggregate mean of 4.02 and an aggregate standard deviation of 0.36, suggesting consistent observations across different types of active play. Among the specific indicators, the highest weighted mean was recorded for children who played alone engaging in simple motor activities such as running or ringing bells (WM = 4.05). This was closely followed by playing alone for the enjoyment of physical sensations (WM = 4.03) and playing make-believe independently (WM = 4.02). Even solitary pretend play (WM = 3.99) remained firmly within the "High" category, showing that many children preferred to engage in imaginative and physical activities without involving peers. These results suggest that the preschoolers were comfortable exploring self-initiated active and imaginative play, which supports the development of gross motor skills, creativity, and self-regulation. The prevalence of solitary-active behaviors can be beneficial for fostering independence, sensory exploration, and intrinsic motivation. However, while these activities are developmentally valuable, consistently playing alone in active contexts may limit opportunities for

children to learn cooperation, negotiation, and shared problem-solving, which are often practiced during group play. Therefore, teachers and caregivers might consider creating play scenarios that blend individual and social experiences, such as parallel play setups or small-group pretend games. These strategies can help children gradually build comfort interacting with peers while still enjoying the autonomy and sensory satisfaction of active play.

Table 4. Level of Play Behavior of the Preschoolers in Terms of Social Play

S/N	Indicators	WM	SD	Verbal Description
1	talks to other children during play	4.04	0.20	High
2	plays 'make-believe' with other children	4.06	0.24	High
3	engages in group play	4.08	0.27	High
4	plays in groups with (not just beside) other children	4.06	0.24	High
5	engages in active conversations with other children during play	4.08	0.27	High
6	engages in pretend play with other children	4.05	0.22	High
	Aggregate Mean	4.06		
	Aggregate Standard Deviation		0.24	High

The data presented in Table 4 demonstrate that preschoolers exhibited a high level of social play behavior, with an aggregate mean of 4.06 and a low aggregate standard deviation of 0.24, indicating strong agreement among teacher ratings. The highest weighted means were observed for engaging in group play (WM = 4.08) and active conversations during play (WM = 4.08), highlighting that children were not only physically present with peers but were also interacting meaningfully. Other indicators, such as playing make-believe with others (WM = 4.06) and talking to other children during play (WM = 4.04), also reflected consistently high engagement. The lowest mean, though still rated as "High," was for pretend play with peers (WM = 4.05), showing minimal variation across the types of social interactions assessed. These findings suggest that the children were highly inclined to participate in collaborative and communicative play, an important developmental strength. High levels of social play are associated with enhanced language development, emotional regulation, and the acquisition of social problem-solving skills. This pattern indicates that the preschool environment was likely supportive of peer interaction and cooperative experiences. The implications for practice are positive: teachers can build on this foundation by providing more complex group activities, role-play scenarios, and collaborative projects to further develop children's interpersonal skills and deepen friendships. Additionally, the strong social engagement observed may help buffer children against social withdrawal and support a smoother transition to more structured educational settings where cooperation and communication are essential.

The data in Table 5 show that preschoolers demonstrated a high level of rough play behavior, reflected by an aggregate mean of 4.07 and a low aggregate standard deviation of 0.26, indicating consistent teacher observations across participants. Both indicators playing rough-and-tumble with other children (WM = 4.07) and engaging in playful or mock fighting (WM = 4.07) were rated equally high. This suggests that children frequently participated in energetic, physical interactions with peers that, while boisterous, were perceived by teachers as developmentally appropriate and positive forms of play.

Table 5. Level of Play Behavior of the Preschoolers in Terms of Rough Play

S/N	Indicators	WM	SD	Verbal Description
1	plays 'rough-and-tumble' with other children	4.07	0.26	High
2	engages in playful/mock fighting with other children	4.07	0.26	High
	Aggregate Mean	4.07		
	Aggregate Standard Deviation		0.26	High

These findings highlight the role of rough play as an important dimension of early childhood development. Rough-and-tumble activities provide valuable opportunities for children to practice self-regulation, turn-taking, understanding social boundaries, and managing physical impulses in a safe, playful context. High engagement in rough play also supports the development of gross motor skills such as balance, strength, and coordination. For educators and caregivers, these results suggest the need to recognize and support safe, supervised physical play, rather than discourage it out of concern for misinterpretation as aggression. Clear rules, adult guidance, and structured opportunities for rough play can help children enjoy the benefits while minimizing conflicts or accidental harm.

Table 6. Level of Motor Skills of the Preschoolers in Terms of Gross Motor Skill

S/N	Indicators	WM	SD	Verbal Description
1	climbs on chair or other elevated piece of furniture like a bed without help.	4.57	0.50	Very High
2	walks backwards	4.53	0.50	Very High
3	runs without tripping or falling.	4.39	0.49	Very High
4	walks upstairs holding onto a handrail, two feet on each step with one hand held.	4.18	0.39	High
5	walks upstairs holding onto a handrail, two feet on each step.	4.13	0.34	High
6	walks upstairs with alternate feet without holding onto a handrail	4.12	0.33	High
7	walks upstairs with alternate feet without holding onto a handrail.	4.10	0.30	High
8	walks downstairs with alternate feet without holding onto a handrail	4.07	0.26	High
9	moves body part as Directed.	4.24	0.43	Very High
10	jumps up	4.26	0.44	Very High
11	throws ball overhead with direction	4.27	0.45	Very High
12	hops one to three steps on preferred foot	4.23	0.42	Very High
13	jumps and turns	4.12	0.33	High
14	dances patterns/joins group movement activities	4.33	0.47	Very High
	Aggregate Mean	4.25		Very High
	Aggregate Standard Deviation		0.40	

The data presented in Table 6 show that preschoolers demonstrated an overall very high level of gross motor skills, as indicated by an aggregate mean of 4.25 and an aggregate standard deviation of 0.40, reflecting strong and consistent performance across assessed competencies. Several indicators received *very high* ratings, such as climbing on elevated furniture without help (WM = 4.57) and walking backwards (WM = 4.53), highlighting advanced coordination and balance. Similarly, children showed strong abilities to run without tripping (WM = 4.39), jump up (WM = 4.26), throw a ball overhead accurately (WM = 4.27), and participate in dancing or group movement activities (WM = 4.33). Indicators requiring more complex stair navigation, like walking upstairs or downstairs with alternate feet without support, were rated slightly lower (means ranging from 4.07–4.13) but still within the "High" category, suggesting these skills are still developing but largely present. These results indicate that the preschoolers as a group possess well-developed gross motor skills appropriate for their age, reflecting both maturation and opportunities for active play and movement practice in their environment. This strong motor competence has important implications: high gross motor proficiency contributes not only to physical health and readiness for more complex physical tasks in school but also to self-confidence, social participation, and positive attitudes toward physical activity. Educators and caregivers should continue to provide varied movement experiences such as climbing, dancing, and ball games to sustain and further enhance these skills, while offering support and encouragement in slightly more challenging areas like independent stair use with alternating feet.

Table 7. Level of Motor Skills of the Preschoolers in Terms of Fine Motor Skills

S/N	Indicators	WM	SD	Verbal Description
1	uses all five fingers to get food/toys placed on a flat surface	4.37	0.49	Very High
2	picks up objects with thumb and index finger	4.43	0.50	Very High
3	displays a definite hand preference	4.33	0.53	Very High
4	puts small objects in/out of containers	4.32	0.47	Very High
5	holds crayon with all the fingers of his hand making a fist (i.e., pal mar grasp)	4.33	0.47	Very High
6	unscrews the lid of a container or unwraps food	4.23	0.42	Very High
7	scribbles spontaneously	4.17	0.38	High
8	scribbles vertical and horizontal lines	4.17	0.38	High
9	draws circle purposefully	4.14	0.40	High
10	draws a human figure (head, eyes, trunk, arms, hands/fingers)	4.06	0.31	High
11	draws a house using geometric forms	3.99	0.41	High
	Aggregate Mean	4.23		Very High
	Aggregate Standard Deviation		0.43	

The data presented in Table 7 reveal that preschoolers demonstrated an overall very high level of fine motor skills, reflected by an aggregate mean of 4.23 and an aggregate standard deviation of 0.43, indicating consistent performance across various fine motor tasks. The highest ratings were observed in fundamental manipulative abilities, such as picking up objects with the thumb and index finger (WM = 4.43) and using all fingers to grasp items on a flat surface (WM = 4.37), which are foundational for later tool use and hand-eye coordination. Other tasks with very high means included displaying definite hand preference (WM = 4.33), placing small objects in and out of containers (WM = 4.32), and holding crayons with a palmar grasp (WM = 4.33), all of which show strong development in precision and control. While slightly lower, drawing and prewriting skills still rated as "High," with children scribbling vertical and horizontal lines (WM = 4.17), drawing circles (WM = 4.14), creating human figures (WM = 4.06), and attempting more complex forms like houses (WM = 3.99). This suggests that while the foundational fine motor abilities are very well established, more sophisticated representational drawing skills are still in development, which is typical for this age group. These results imply that the children are well-prepared for the fine motor demands of early schooling, including writing, cutting, and manipulating small objects. To build on these strengths, educators should continue to provide rich opportunities for drawing, crafts, and manipulative play, which will help refine precision and encourage the progression from basic grasps to mature pencil grips and detailed representations.

Table 8. Relationship Between Level of Play Behavior and Level of Motor Skills of the Preschoolers

Variables	r-value	Strength of Correlation	p - value	Decision	Result
Play Behavior and Gross Motor Skills	0.175	Negligible Positive	0.081	Do not reject Ho	Not Significant
Play Behavior and Fine Skills	0.315*	Weak Positive	0.001	Reject Ho	Significant

**significant at p<0.05 (two-tailed)*

The data in Table 8 summarize the relationship between preschoolers' level of play behavior and their motor skills development. The correlation analysis shows that play behavior and gross motor skills had an r-value of 0.175, indicating a negligible positive relationship. The p-value for this correlation was 0.081, exceeding the 0.05 threshold for significance. Therefore, the null hypothesis was not rejected, suggesting that in this sample, there was no statistically significant association between the level of play behavior and the development of gross motor skills. This implies that while children were frequently engaged in diverse play activities, these behaviors were not strongly predictive of their gross motor skill proficiency, which may be influenced more by maturation, genetics, or structured physical activities. In contrast, the correlation between play behavior and fine motor skills yielded an r-value of 0.315, interpreted as a weak positive correlation. The p-value was 0.001, which is highly significant at p <

0.05. This result led to the rejection of the null hypothesis, confirming that higher levels of play behavior were significantly associated with better fine motor skills development. This finding aligns with research showing that frequent engagement in manipulative and creative play activities such as drawing, building, and pretend play helps refine hand-eye coordination, dexterity, and other fine motor competencies. These results underscore the importance of incorporating rich, varied play experiences in early childhood programs, particularly to support fine motor skill development, while recognizing that gross motor skills may require additional targeted interventions or structured movement activities beyond unstructured play.

4. Discussions

The findings of this study highlight that preschool children engage at consistently high levels across all observed play behaviors, ranging from solitary-passive and solitary-active play to social and rough-and-tumble activities. These patterns are consistent with contemporary research underscoring that diverse play experiences are a hallmark of early childhood and critical to social-emotional development and adaptive functioning (Adolph & Hoch, 2019), (Ginsburg, 2019). The high frequency of reticent and solitary play behaviors may reflect children's preferences for observation, experimentation, and self-directed learning rather than a lack of social competence (Walker, 2020). However, the consistently high ratings of social play and rough play also suggest a developmentally healthy balance between independent and interactive experiences, which is known to promote socio-cognitive flexibility and resilience (Pellegrini & Smith, 2020). Recent studies have emphasized that rough-and-tumble play can foster self-regulation, perspective-taking, and emotional understanding, contrary to traditional concerns about aggression (Karaca & Uzun, 2020). This combination of rich solitary and social experiences reflects an environment conducive to holistic development, where children can explore, observe, and engage according to their individual readiness and temperament (Tan et al., 2020).

Notably, the correlation analysis revealed a significant positive relationship between play behavior and fine motor skills, while no significant association emerged between play behavior and gross motor skills. This pattern aligns with recent evidence showing that frequent engagement in manipulative and creative play activities such as building, drawing, and pretend play directly supports the refinement of fine motor coordination, precision, and dexterity (Cheraghi et al., 2021), (Webster et al., 2020). Conversely, gross motor skills tend to be more strongly influenced by structured physical activity, guided movement programs, and maturation rather than unstructured free play alone (Tortella et al., 2022), (Spring et al., 2024). For example, recent interventions using targeted gross motor curricula have shown greater gains in balance, hopping, and coordinated locomotion compared to settings relying only on unstructured activity (Foweather et al., 2021), (Cheung & Ostrosky, 2023). These findings underscore the importance of providing intentional, skill-focused opportunities in addition to rich play experiences, to ensure comprehensive motor development. Early childhood educators are thus encouraged to integrate guided movement activities, structured motor play, and fine motor tasks into daily routines to maximize both gross and fine motor outcomes (Yang & Ostrosky, 2023).

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