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Strategies of Psychomotor Intervention in Students with ADHD: The Perspective of Preschool, Primary Education, and Special Education Teachers

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ABSTRACT: *This study investigates the psychomotor strategies used by Preschool Teachers, Primary School Teachers, and Special Education Teachers in supporting children with Attention Deficit Hyperactivity Disorder (ADHD). The main objective is to analyze the contribution of psychomotor activities to the learning process and to assess teachers' awareness of appropriate intervention strategies. A mixed-methods approach (qualitative and quantitative) was applied using a questionnaire administered to 27 teachers equally distributed across three professional groups. Results indicate that teachers demonstrate general awareness of ADHD characteristics, causes, and interventions, although gaps in specific training remain evident. Findings also highlight the perceived effectiveness of psychomotor strategies in improving attention, self-regulation, and classroom behavior. These results reinforce the importance of continuous teacher training and structured psychomotor-based interventions in inclusive education contexts.*

Keywords: ADHD, educational intervention, inclusive education, psychomotor strategies, teacher perceptions

I. INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is widely recognized as a neurodevelopmental disorder characterized by persistent patterns of inattention, hyperactivity, and impulsivity that are developmentally inappropriate and interfere significantly with academic, social, and emotional functioning (American Psychiatric Association, 2013). Current neuroscientific literature conceptualizes ADHD as a disorder of executive functioning, particularly affecting inhibitory control, working memory, and self-regulation mechanisms (Barkley, 2015; Sonuga-Barke et al., 2010).

In educational contexts, ADHD manifests through difficulties in sustaining attention, regulating motor activity, following instructions, and completing structured tasks. These challenges often compromise learning outcomes and require differentiated pedagogical responses that extend beyond traditional instructional methodologies.

Psychomotor education provides a relevant theoretical and practical framework for addressing these challenges. Psychomotricity is understood as a transdisciplinary field that investigates the systemic and reciprocal relationships between cognitive processes, emotional development, and motor behavior (Fonseca, 2005). It assumes that the body is not merely an instrument of action but a fundamental mediator in cognitive and affective development.

Developmental theories, particularly those of Wallon and subsequent contributions by Le Boulch (1995) and Lapierre (2002), emphasize that motor activity plays a central role in structuring thought, emotion, and social interaction. From this perspective, movement is considered a foundational element in the construction of learning processes and self-regulation capacities.

Empirical evidence suggests that psychomotor-based interventions can positively influence attention regulation, executive functioning, motor coordination, and emotional control in children with ADHD (Diamond & Ling, 2016; Ziereis & Jansen, 2015). These interventions typically involve structured motor activities, coordination tasks, sensory stimulation, rhythmic exercises, and relaxation techniques, all of which contribute to improved self-regulatory behavior.

Despite these recognized benefits, the implementation of psychomotor strategies in school settings remains inconsistent, largely due to insufficient teacher training and limited exposure to specialized intervention

methodologies. Studies have shown that many educators report a lack of formal preparation in ADHD-related educational strategies and psychomotor intervention approaches, which limits their ability to effectively support affected students (DuPaul & Stoner, 2014).

Within the framework of inclusive education, international policy guidelines emphasize the importance of adapting pedagogical practices to learner diversity and ensuring equitable access to educational opportunities (UNESCO, 2017). In this context, psychomotor strategies represent a promising pedagogical resource, as they integrate physical movement with cognitive engagement and emotional regulation processes.

However, there is still limited empirical research focusing on teachers' perceptions and actual practices regarding psychomotor intervention strategies in ADHD contexts, particularly within the Portuguese educational system. This study aims to address this gap by exploring how teachers understand, perceive, and implement psychomotor strategies in their daily educational practice.

The paper is structured as follows: Section 2 presents the methodology, including research design, participants, and instruments; Section 3 presents and discusses the results; Section 4 concludes the study with implications, limitations, and recommendations for future research.

II. METHODOLOGY

Research Design

A mixed-methods exploratory case study design was adopted, combining quantitative and qualitative approaches (Yin, 2009; Quivy & Campenhoudt, 2008). This approach enables an in-depth analysis of teachers' perceptions and practices regarding psychomotor strategies in ADHD intervention.

Participants

The study involved 27 teachers:

9 Preschool teachers

9 Primary education teachers (1st Cycle)

9 Special education teachers

Participants were selected from three public schools belonging to the Braamcamp Freire School Cluster in Odivelas, Lisbon Metropolitan Area (Portugal).

Data Collection Instrument

Data were collected using a structured questionnaire administered online via Google Forms. The instrument included items related to ADHD knowledge, psychomotor strategies, classroom practices, and perceived effectiveness of interventions.

Data Analysis

Quantitative data were analyzed using descriptive statistics, while qualitative responses were examined through content analysis.

III. RESULTS AND DISCUSSION

The results are presented in alignment with the research objectives and derived from the analysis of 27 teachers distributed equally across Preschool, Primary Education, and Special Education contexts. Data are organized into thematic dimensions: (i) teacher profile and professional experience, (ii) knowledge of ADHD, (iii) training in psychomotor strategies, (iv) observed student behaviors, and (v) pedagogical strategies and perceived outcomes.

Teacher Profile and Professional Experience

The sample is evenly distributed across the three educational groups (Table 1), ensuring balanced representation of different educational levels.

Table 1. Sample Distribution

Group	n	%
Preschool Teachers	9	33.3
Primary Teachers	9	33.3
Special Education Teachers	9	33.3

Regarding professional experience, the majority of participants (59.3%) reported more than 11 years of teaching experience (Table 2), indicating a predominantly experienced teaching cohort.

Table 2. Teaching Experience

Years of Service	%
> 11 years	59.3
≤ 11 years	40.7

This distribution suggests a stable and experienced workforce; however, it also raises questions about generational renewal and adaptation to contemporary inclusive education demands.

Teachers' Knowledge of ADHD

Findings reveal a heterogeneous level of knowledge regarding ADHD prevalence and characteristics. As shown in Table 2, 59.3% of teachers reported not having knowledge about ADHD prevalence, while only 40.7% indicated awareness.

Table 3. Knowledge of ADHD Prevalence

Response	%
Aware of prevalence	40.7
Not aware	59.3

This result indicates a relevant gap between classroom exposure to ADHD and formal conceptual understanding of its epidemiology and neurodevelopmental nature. This is consistent with literature suggesting that ADHD is often still interpreted primarily as a behavioral rather than neurobiological condition among educators (DuPaul & Stoner, 2014).

Training in Psychomotor and ADHD-Specific Strategies

Participants reported limited formal training in psychomotor intervention and ADHD-specific pedagogical approaches. Table 4 summarizes this dimension.

Table 4. Training in ADHD/Psychomotor Strategies

Finding	Interpretation
Limited formal training	Predominant
Lack of structured preparation	Significant gap

This lack of training suggests that psychomotor strategies are mostly applied intuitively rather than through structured pedagogical frameworks, which may limit consistency and effectiveness of interventions across educational contexts.

Observed ADHD-Related Behaviors in Psychomotor Contexts

Teachers consistently identified behavioral patterns associated with ADHD during psychomotor and classroom activities. As shown in Table 5, motor restlessness was the most frequently reported behavior (74.1%).

Table 5. Observed ADHD Behaviors

Behavior	Prevalence
Motor restlessness	74.1%
Difficulty remaining seated	High
Impulsivity	High
Inattention	High

These findings reinforce the classical behavioral profile of ADHD described in diagnostic frameworks (APA, 2013), particularly in contexts requiring sustained attention and postural control.

Psychomotor Strategies Implemented by Teachers

Teachers reported using a variety of psychomotor strategies aimed at improving self-regulation and engagement (Table 6). The most frequently mentioned strategies included active breaks, structured routines, and sensory-based interventions.

Table 6. Psychomotor Strategies Used

Strategy	Description
Active breaks	Movement interruptions during lessons
Structured routines	Predictable classroom organization
Sensory materials	Tools for self-regulation
Multisensory learning	Integration of motor and cognitive tasks
Relaxation techniques	Breathing and calming exercises

These strategies reflect a predominantly pragmatic and classroom-based approach, aligned with inclusive education principles, although not always grounded in formal psychomotor training.

Perceived Effects of Psychomotor Strategies

Teachers consistently reported positive outcomes associated with psychomotor interventions (Table 7). Improvements were most evident in attention regulation and behavioral control.

Table 7. Perceived Effects

Outcome	Impact
Attention improvement	High
Reduction of hyperactivity	High
Emotional regulation	Moderate–High
Motor coordination	High

Academic engagement	Positive

These findings support existing empirical evidence suggesting that movement-based interventions contribute to executive functioning and self-regulation improvements in children with ADHD (Diamond & Ling, 2016; Ziereis & Jansen, 2015).

Synthesis of Findings

Overall, the results indicate three central patterns:

1. High practical awareness but limited theoretical knowledge of ADHD
2. Low levels of formal training in psychomotor intervention strategies
3. Strong perceived effectiveness of psychomotor approaches in classroom behavior regulation

This combination suggests a gap between practice and theory, where teachers apply useful strategies without necessarily having structured scientific or methodological grounding.

IV. Discussion

The present study examined teachers' perceptions and practices regarding psychomotor intervention strategies for children with ADHD across Preschool, Primary Education, and Special Education contexts. The findings reveal a complex interplay between practical pedagogical awareness, limited theoretical grounding, and strong perceived effectiveness of movement-based strategies. This discussion situates these findings within the broader international literature and reflects on their theoretical, educational, and policy implications.

Knowledge-Practice Gap in ADHD Understanding

A central finding of this study is the coexistence of moderate practical awareness of ADHD behaviors with significant gaps in conceptual and theoretical understanding, particularly regarding its neurodevelopmental and executive-function basis. This misalignment is consistent with international research indicating that teachers often conceptualize ADHD primarily through behavioral descriptors rather than neurocognitive frameworks (DuPaul & Stoner, 2014; Sciutto et al., 2016).

This limited conceptualization has important consequences. When ADHD is interpreted mainly as "disruptive behavior," there is a risk of pedagogical responses being oriented toward classroom control rather than developmental support. Such a reductionist view may inadvertently reinforce stigmatization and reduce the implementation of evidence-based interventions that target executive functioning deficits

International studies emphasize that teacher understanding of ADHD significantly influences classroom strategies, referral patterns, and expectations of student performance (Anderson et al., 2012). The present findings align with this literature, suggesting that even experienced teachers may lack updated neuroeducational training, despite frequent exposure to ADHD cases.

Psychomotor Strategies as Embodied Regulation Tools

The study confirms that psychomotor strategies are widely perceived as effective tools for improving attention, emotional regulation, and behavioral control. This perception is strongly aligned with embodied cognition theories, which posit that cognitive processes are deeply rooted in sensorimotor experience (Wilson, 2002; Glenberg, 2010).

From a neurodevelopmental perspective, movement-based interventions may support executive functioning by engaging attentional networks, inhibitory control systems, and reward pathways associated with dopamine regulation (Diamond & Ling, 2016). This is particularly relevant in ADHD, where dysregulation of frontostriatal circuits has been widely documented (Barkley, 2015).

International empirical studies support the present findings. For example, structured physical activity programs have been shown to improve inhibitory control and working memory in children with ADHD (Pontifex et al., 2013; Ziereis & Jansen, 2015). Similarly, meta-analytical evidence indicates that movement-based interventions yield moderate but consistent effects on behavioral regulation and classroom engagement (Sibley et al., 2014).

However, the present study highlights an important nuance: teachers predominantly apply psychomotor strategies in an intuitive and context-dependent manner, rather than within structured intervention frameworks. This raises concerns about variability, sustainability, and fidelity of implementation—issues consistently identified in international implementation science literature (Fixsen et al., 2005).

Institutional and Training Deficits as Structural Constraints

A critical finding is the lack of formal training in psychomotor intervention and ADHD-specific pedagogical strategies. This systemic gap reflects a broader structural weakness in teacher education programs, particularly in relation to neurodevelopmental disorders and embodied learning methodologies.

Comparative studies across Europe indicate similar patterns, where inclusive education policies have expanded responsibilities without equivalent investment in specialized teacher preparation (EADSNE, 2012; Florian & Black-Hawkins, 2011). As a result, teachers are frequently expected to implement differentiated strategies without adequate conceptual or methodological grounding.

This disconnect between policy expectations and professional preparation contributes to what can be described as an "implementation gap" in inclusive education systems. Teachers may adopt compensatory strategies (e.g., active

breaks, sensory tools), but without systemic support, these remain fragmented and dependent on individual initiative rather than institutional design.

ADHD as an Educational and Public Health Challenge

The findings also reinforce ADHD as not only an educational issue but also a public health and social inclusion challenge. The high prevalence of hyperactivity and attentional difficulties reported by teachers reflects the persistent classroom impact of ADHD symptomatology, consistent with global epidemiological estimates (Polanczyk et al., 2007).

However, the interpretation of ADHD remains uneven across educational systems. In many contexts, ADHD continues to be misattributed to poor discipline or parenting, which can delay appropriate intervention and reinforce exclusionary practices. This study suggests that, despite increased awareness, such misconceptions persist at the classroom level.

From a policy perspective, this reinforces the need for integrated approaches between education, health, and social services, ensuring that ADHD is addressed as a multidimensional condition requiring coordinated intervention.

Psychomotor Intervention and Inclusive Education Policy Implications

The findings have direct implications for inclusive education policy. International frameworks, including UNESCO's inclusive education guidelines, emphasize the need for pedagogical flexibility and learner-centered approaches (UNESCO, 2017). Psychomotor strategies align strongly with these principles, as they offer multisensory, adaptive, and developmentally responsive learning pathways.

However, for such strategies to move from individual practice to systemic implementation, several policy actions are necessary:

Teacher Education Reform

Psychomotor education and ADHD-related neurodevelopmental training should be systematically integrated into initial teacher education programs. Current evidence suggests that without early professional exposure, teachers rely primarily on experiential learning rather than evidence-based practice.

Continuous Professional Development

Mandatory in-service training programs focusing on ADHD, executive functioning, and psychomotor intervention should be implemented. These programs should emphasize practical classroom applications supported by scientific evidence.

Curriculum Integration of Psychomotor Education

Psychomotor development should not be confined to physical education or special education contexts. Instead, it should be embedded across curricula as a cross-cutting pedagogical principle supporting cognitive and emotional regulation.

Institutional Support Structures

Schools should be equipped with interdisciplinary teams including psychologists, special educators, and psychomotor specialists to support teachers in intervention design and implementation.

Limitations and Future Research Directions

While the study provides relevant insights, it is limited by its relatively small sample size and its focus on a specific geographic and institutional context. Future research should expand to larger and more diverse samples, including longitudinal and intervention-based designs.

Additionally, future studies should examine the direct impact of structured psychomotor intervention programs on measurable academic and neurocognitive outcomes in children with ADHD, moving beyond perception-based data toward experimental validation.

Final Synthesis

Overall, this study highlights a significant paradox: teachers recognize the value of psychomotor strategies in supporting children with ADHD, yet lack the formal training and institutional conditions required for systematic implementation. Bridging this gap requires not only pedagogical innovation but also structural policy reform and investment in teacher professionalization.

Psychomotor intervention emerges not merely as a pedagogical technique, but as a potential component of a broader inclusive education paradigm that integrates body, cognition, and emotion in the learning process.

V. CONCLUSION

This study investigated the perceptions and practices of Preschool, Primary Education, and Special Education teachers regarding psychomotor intervention strategies for children with ADHD. The findings highlight that psychomotor strategies are widely recognized by teachers as effective tools for enhancing attention regulation, reducing hyperactive behaviors, and promoting emotional and behavioral self-regulation in classroom contexts

Overall, the results indicate that while teachers demonstrate practical awareness and experience in applying movement-based strategies, there remains a significant gap in formal theoretical knowledge of ADHD as a neurodevelopmental condition, as well as in structured training related to psychomotor intervention. This gap

contributes to an uneven and largely intuitive implementation of strategies, which depends more on individual professional experience than on systematic pedagogical frameworks.

Despite these limitations, the study confirms the pedagogical value of psychomotor approaches within inclusive education settings. By integrating motor, cognitive, and emotional dimensions, psychomotor activities provide a meaningful pathway to support children with ADHD, particularly in terms of improving self-regulation, sustained attention, and classroom engagement.

From a practical perspective, the findings emphasize the urgent need for strengthening teacher education programs, particularly through the inclusion of neurodevelopmental psychology, ADHD-specific pedagogical strategies, and psychomotor education methodologies. Continuous professional development should be prioritized to ensure that teachers are equipped with evidence-based tools capable of addressing the complex needs of students with ADHD.

At the policy level, the study reinforces the importance of integrating psychomotor intervention frameworks into inclusive education policies. Schools should be supported with multidisciplinary resources, including specialized staff and structured intervention programs, to ensure consistent and effective implementation of inclusive strategies across educational contexts.

However, the study is limited by its relatively small sample size and its focus on a specific educational cluster, which may restrict the generalizability of the findings. Future research should expand to larger and more diverse samples and consider longitudinal or intervention-based designs to evaluate the direct impact of psychomotor programs on cognitive, behavioral, and academic outcomes in children with ADHD.

In conclusion, psychomotor strategies represent a promising and underutilized pedagogical resource in ADHD intervention. Their systematic integration into teacher training and educational policy could significantly enhance inclusive educational practices and contribute to more equitable learning environments for children with neurodevelopmental disorders.

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