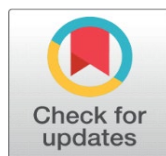


ADHD, PHYSICAL ACTIVITY AND INCLUSION IN VITÓRIA: A PEDAGOGICAL AND COMPARATIVE READING OF THE STUDY BY V. F. DAMIÃO AND K. G. CASTOR, FROM AN ECOLOGICAL/LIBERTARIAN PERSPECTIVE

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ABSTRACT

This article offers a pedagogical and comparative reading of a study conducted by Vitor França Damião and Katia Gonçalves Castor in an elementary school in Vitória (Brazil), which analyzed the role of physical activity in the neuropsychomotor development of children with ADHD. The study not only provides objective evidence of the cognitive and socio-relational benefits of physical activity but also highlights the structural and institutional challenges in integrating ADHD into educational systems.

A comparison with the Italian context reveals both similarities and divergences. In both Brazil and Italy, ADHD is characterized by diagnostic complexity, fragmented institutional responses, and an ongoing tension between clinical and educational perspectives. While Italy benefits from a more established normative framework, it also risks excessive standardization and bureaucratization, whereas Brazil demonstrates creative practices in the absence of formal guidelines.

The analysis shows that physical activity should not be seen as an ancillary or compensatory intervention, but as an integral pedagogical device capable of fostering self-regulation, attention, executive functions, and social competences. Drawing on ecological (Bronfenbrenner), sociocultural (Vygotskij, Freire, Epstein), libertarian (Kropotkin, Faure, Reclus, Malatesta, Illich, Foucault), and complex thought frameworks (Morin, Kuhn), as well as recent neuroscientific insights (Segev, Laborit), the article argues for an inclusive and ecological approach to ADHD.

The conclusion emphasizes that physical education, when designed as a cooperative and socially mediated environment, represents a structural component of inclusive education. Rather than correcting deficits, it creates conditions for participation, relational growth, and the emergence of individual potential.

Keywords: Physical Activity, ADHD, Pedagogical

1. INTRODUCTION

1.1. CONTEXT AND OBJECTIVE OF THE STUDY

The study conducted by Vitor França Damião and Katia Gonçalves Castor in an elementary school in Vitória (Brazil) aims to analyze the role of physical activity in the neuropsychomotor development of children with ADHD, while also highlighting how the local educational system responds to the specific needs of these students [Martinhago and Caponi \(2019\)](#), [Couto et al. \(2010\)](#), [Brazil \(2022\)](#). Of particular interest in this work, beyond the relevance of the data collected and the objective

confirmation of the benefits of physical activity for children with ADHD, is the way in which the Brazilian experience lends itself to a comparative reading with our own educational contexts: both share the difficulty of reconciling clinical diagnosis with a genuinely pedagogical perspective. In this sense, I regard the study as a valuable opportunity to reflect on how physical activity (indeed, any activity that entails a component related to physical-motor functioning) can become more than an ancillary intervention: physical education must be considered an integral part of an educational project that values subjective timing, relational dimensions, and inclusion as an everyday process.

2. DATA ACCESS AND INSTITUTIONAL CHALLENGES

The process of accessing information from the Municipal Department of Education of Vitoria (SEME/PMV) revealed complex bureaucratic steps, unclear sectoral divisions, and uncertainty regarding the responsibility for ADHD (which is not formally classified under Special Education). Although the data are present in the school management system, they are not publicly available and require internal protocols for consultation. The study was therefore carried out in light of these difficulties.

Similar situations can also be observed in Italy: ADHD, recognized as a neurodevelopmental disorder [Ministero della Salute. \(2017\)](#), does not automatically fall within the categories of disabilities protected under Legge 104/1992 (Italian Law 104/1992 on the rights and social inclusion of persons with disabilities) and is often managed within the framework of Disturbi Specifici di Apprendimento (DSA – Specific Learning Disorders) or Bisogni Educativi Speciali (BES – Special Educational Needs), depending on local interpretations. This uncertain classification creates critical issues in the collection, systematization, and accessibility of data. Although a national registry dedicated to ADHD does exist¹, data collection depends on regional information systems and, at times, on individual schools, resulting in potential fragmentation and lack of uniformity [MIUR \(2012\)](#), [Ministero della Salute. \(2017\)](#).

3. ESSENTIAL FRAMEWORK: ADHD BETWEEN CLINIC AND EDUCATION

ADHD, a neurodevelopmental disorder with early onset and strong familial component, is characterized by inattention, hyperactivity, and impulsivity. The estimated prevalence ranges between 5% and 8% in childhood, with frequent comorbidities. In school settings, the first signs usually appear around the age of seven and manifest in variable forms, including not only difficulties in behavioral management but also specific challenges in reading, writing, mathematical reasoning, and active participation in classroom life. Literature has long demonstrated that physical activity can have a positive impact not only on behavioral regulation but also on the enhancement of cognitive and socio-relational functions [Alencar et al. \(2019\)](#), [Cavalcanti \(2015\)](#), [Paiano et al. \(2019\)](#), [Silva et al. \(2011\)](#).

¹ In Italy, a National Registry for ADHD has been active since 2004. It is regulated through a therapeutic plan and mandatory requirements for accredited centers. The registry is managed by the Istituto Superiore di Sanità (ISS – National Institute of Health), which collects data from regional reference centers accredited by the Regions for the diagnosis and treatment of ADHD.

This perspective makes it possible to interpret ADHD not solely through a clinical-health lens but also within a pedagogical framework that emphasizes the body, movement, and relationships as instruments of learning. Such an orientation both highlights the risks of diagnostic reductionism and supports the view of physical activity as an integral component of an inclusive educational project, in which bodily gestures become a pathway to knowledge and social participation.

4. CASES IDENTIFIED IN THE SCHOOL NETWORK

Data collected in Vitória indicate 105 cases of ADHD associated with other disorders and disabilities, and 268 associated with specific learning disorders, recorded in the school management system but not made publicly accessible. This represents a partial picture, affected by the lack of systematic statistics and shared guidelines, yet already reflecting the scale of a phenomenon that is far from marginal.

When compared with the Italian context, the proportions appear similar, despite differences in diagnostic and institutional management. In Italy, estimates suggest that between 1 and 2 million people may live with ADHD, corresponding to approximately 3–4% of the population, with figures ranging between 2% and 6% of school-age children².

These data confirm that ADHD is a global phenomenon, characterized by significant prevalence and uneven institutional recognition. In both the Brazilian and Italian contexts, diagnostic complexity often leads to underestimation or delayed recognition. In both cases, there emerges the need for educational policies that approach the disorder not only as a clinical condition but also as a pedagogical and social issue, closely tied to school inclusion pathways and the daily practices of educators and teachers.

5. GUIDELINES AND TRAINING: CURRENT STATE

In Brazil, the study indicates that SEME (Secretaria Municipal de Educação, the Municipal Department of Education) does not have specific guidelines for ADHD. Only in 2022 was a

working group established to develop operational orientations, and the Diretrizes Pedagógicas (Pedagogical Guidelines) of 2023 began to introduce more detailed indications. At the same time, continuing education courses were launched, with significant emphasis on de-medicalization, in line with Freire's idea of a liberating pedagogy [Freire \(1996\)](#) and with the importance of the school– family partnership [Epstein \(2010\)](#).

The Italian situation appears more structured at the regulatory level, thanks to the Linee di indirizzo nazionali per l'ADHD (National ADHD Guidelines) published by the Ministero della Salute [Ministry of Health \(2017\)](#). These guidelines stress the need for a multidisciplinary approach, for integration between health and school systems, and for the elaboration of individualized educational plans. However, challenges remain in Italy as well: the guidelines have a predominantly medical orientation, with the risk of reducing the phenomenon to a purely clinical issue, while the school system struggles to translate such indications into effective daily practices at the didactic level and into genuinely inclusive approaches.

² However, diagnoses are often delayed, and the disorder tends to persist into adulthood, with a transformation of symptoms: hyperactivity tends to decrease, while inattention and impulsivity remain critical factors [Ministero della Salute. \(2017\)](#).

From a pedagogical perspective, a significant element emerges: while the clinical framework provides indispensable tools for diagnosis and therapy, educational practice must go beyond the logic of deficit correction. The Brazilian experience shows that the absence of clear guidelines creates opportunities for didactic creativity, though it risks generating fragmentation. The Italian experience, while offering greater normative stability, risks rigidifying interventions within standardized protocols. In both contexts, what proves necessary is an ecological pedagogical approach that regards the body, movement, and relationships as privileged domains for working on experiences and learning processes.

6. PRACTICES OF SPECIAL EDUCATION TEACHERS

Interviews with special education teachers in Vitória highlighted concrete and sensitive didactic strategies: short and targeted activities, affinity-based group work, and assignments adapted to individual rhythms. These actions become everyday tools to foster the participation of students with ADHD and to strengthen their self-esteem. Although born out of necessity, such approaches represent a significant example of inclusive pedagogy in practice.

Short activities, targeted interventions, alternation of tasks, and brief recreational breaks had already been recommended in the comprehensive study by [Pontifex et al. \(2013\)](#), whose conclusion stated: “These findings indicate that single bouts of moderately intense aerobic exercise may have positive implications for aspects of neurocognitive function and inhibitory control in children with ADHD” [Pontifex et al. \(2013\)](#). Furthermore, the study also emphasized that “research conducted on children without ADHD indicates that a single session of at least 20 minutes can improve concentration, reading and mathematics performance, and inhibitory control,” highlighting that motor activation itself has a beneficial impact on cognitive functions. This is therefore not a “compensatory” intervention to be activated exclusively for the disorder, but an educational practice useful in general, with inclusive and preventive value, which—despite the evidence—is often underestimated or overlooked in daily practice.

A comparison with the Italian context shows that, although the regulatory framework is more clearly defined and centered on the concept of Bisogni Educativi Speciali (BES – Special Educational Needs), the focus on the interaction between physical activity and compensatory strategies is often absent. ADHD is among the recognized conditions that require personalized learning approaches. The key institutional tools, such as the Piano Educativo Individualizzato (PEI

– Individualized Education Plan) for disabilities under Legge 104/1992 or the Piano Didattico Personalizzato (PDP – Personalized Didactic Plan) for BES, should guarantee calibrated and documented educational interventions [MIUR \(2012\)](#). However, there is a risk of bureaucratization that becomes self-referential: drafting a plan is not sufficient. Without being accompanied by a professional culture of change and trust in the relational and creative capacities of teachers, the PEI or PDP risks becoming a sterile document. As confirmed by recent studies on physical activity and ADHD [Bozzato \(2025\)](#), it is precisely through movement, the relationship with the body, and motor activation that effective compensatory strategies and learning enhancements are achieved; moreover, such practices activate meaningful experiential pathways that foster genuine inclusion and self-determination [Valentini and Canini \(2020\)](#).

In summary, although Italy provides a more solid theoretical framework, in both the Italian and Brazilian cases the real turning point is achieved only when

operative practice and regulatory frameworks intertwine with the reflective practice of teachers. The Italian school system could draw inspiration and insights from the creative dynamics observed in Vitória, while at the same time strengthening such practices through the inclusive policies already foreseen in its system. It is in this space—between freedom of action and structural support—that educational devices with true pedagogical depth can be developed.

7. PHYSICAL EDUCATION: ADAPTATIONS AND COOPERATION

In the schools of Vitória, physical education teachers, despite the absence of specific guidelines from SEME (Secretaria Municipal de Educação)³, developed effective practices: circuit activities, short and calibrated tasks, respect for individual limits, and, above all, peer-based work. This latter aspect—cooperation—proved decisive: the class group evolved from initial diffidence to forms of mutual support that facilitated participation, self-regulation, and a sense of self-efficacy. Such outcomes are consistent with the literature on the impact of physical activity on self-regulation and executive functions [Silva et al. \(2011\)](#), [Paiano et al. \(2019\)](#) and confirm socio-cultural perspectives on learning [Vygotskij, \(1978\)](#).

The Italian regulatory framework is more clearly defined (Linee di indirizzo nazionali per l'ADHD:

[Ministero della Salute. \(2017\)](#), but its didactic translation is inconsistent: PEI (Piano Educativo

Individualizzato – Individualized Education Plan) and PDP (Piano Didattico Personalizzato – Personalized Didactic Plan) rarely integrate meaningful motor objectives, and the co-presence of mainstream teachers, special education teachers, and physical education specialists is not systematic. However, when cooperative formats are adopted (station games, functional roles, peer tutoring) and lessons are designed according to an ecological pedagogical approach (flexible timing, multiple success criteria, immediate feedback), the same positive outcomes observed in Vitória can be seen greater participation, reduced conflict, and improved relational quality.

This convergence suggests a key interpretative insight: cooperation is not a motivational “optional,” but a pedagogical device which, when valued, interacts dialectically with activities and practices, transforming movement itself into shared knowledge. In ecological terms [Bronfenbrenner \(1986\)](#), physical education functions effectively when it coordinates the different levels of the environment: organization of microsystems (spaces, rules, materials), mesosystemic connections (school–family– services alliances), and macrosystemic frameworks (curricula and policies, BNCC/Italy). Similarly, the ICF framework of the WHO emphasizes performance and participation as outcomes of the interaction between personal functions and contexts: adapting settings, equipment, and routines already constitutes an educational intervention. This consideration is further confirmed by neuroscience, which underlines that movement is essential for neurodevelopment and indispensable for brain functioning: “a kitten only learns to see if it is able to move around; otherwise, it will grow up blind” [Segev \(2018\)](#). This image underscores the interdependence between motor experience and cognitive development, reinforcing the idea that context (dynamic and bodily) is not

³ SEME (Secretaria Municipal de Educação) is the municipal body in Brazil responsible for managing the local educational system, including the administration of schools, the implementation of national policies, and the monitoring of educational data.

accessory or secondary, but an integral part of the educational process intertwined with neurological development.

From this perspective emerges a meaningful operational proposal with immediate applicability: physical activity should be assumed as a structural component of the educational project for ADHD, not ancillary to clinical and therapeutic interventions. It should be designed as a “cooperative environment,” where bodily gestures become relationship, self-regulation, and meaning. This constitutes the foundation of the axis linking physical activity, executive functions, and inclusion.

8. ROLE OF PEDAGOGICAL STAFF AND SCHOOL PROCEDURES

In the research conducted in Vitória, pedagogical staff emerged as a key operational hub: daily observation, coordination with families and services, adaptation of the environment and teaching (structured routines, scaffolded tasks, immediate feedback, targeted positioning, support during assessments), and evaluation focused on individual progress. This represents a discreet yet decisive form of leadership, one that balances attention to individual timing with methodological coherence.

In Italy, although the regulatory framework (PEI – Piano Educativo Individualizzato, PDP – Piano Didattico Personalizzato, and multidisciplinary teams) is in place, pedagogists are often underutilized: they are involved late—when at all—only after clinical decisions have been made, or confined to tasks of administrative compliance. The result is less integrated planning and an impoverishment of pedagogical mediation—that very competence which, starting from in-situ observation, can transform clinical indications into educational practices such as classroom setting, routines, peer cooperation, and multiple success criteria. In other words, what in Vitória appears as a daily function of the pedagogist, in Italy remains too episodic or dependent on the sensitivity of individual institutions.

Without pedagogical coordination—capable of linking micro-adaptations in the classroom, alliances between school–family–health services, and formative assessment—inclusion remains a fragile and marginal objective. In this context, the pedagogist can (and should) act as an “ecological hinge” [Bronfenbrenner \(1986\)](#) and as a socio-cultural mediator of learning [Vygotskij \(1978\)](#), integrating the objectives of PEI and PDP with practices that are observable and replicable in daily contexts.

9. OPEN ISSUES: DATA, PROTOCOLS, RESPONSIBILITIES

The Brazilian study highlights persistent structural challenges: the absence of unified guidelines, training that is not always targeted, and a lack of transparent and updated data. Without reliable statistics, the scale of the phenomenon remains underestimated, and educational policies risk becoming reactive and fragmented. This gap generates uncertainty and leaves the quality of inclusion dependent on the goodwill of individual teachers or pedagogists.

In Italy, the issue reappears with different traits: national guidelines for ADHD do exist, but there is a risk that protocols may become formal requirements rather than dynamic tools for intervention. Moreover, the central issue remains the underrecognized role of pedagogists, who are almost always excluded from decision-making processes and relegated to the margins of technical committees.

Special education pedagogy, with its specific approach, can provide the key to overcoming this fragmentation: by promoting an integrated reading of data, by treating protocols as instruments of educational—not only medical—mediation, and by fostering shared responsibility among schools, families, and services. Without such a perspective, responsibilities risk being dispersed across sectors, whereas an educational framework could provide a unifying sense to interventions.

10. PEDAGOGICAL IMPLICATIONS

The results observed in Vitória converge with a line of inquiry that I have been pursuing for some time: physical activity as a pedagogical device, not a recreational accessory, but a space in which self-regulation, shared attention, executive functions, and social competences are built. Circuitbased practice, short and graded tasks, peer tutoring, and the structuring of multiple success criteria demonstrate that the body is a privileged pathway to knowledge, especially in ADHD profiles.

In my work on physical activity and ADHD [Bozzato \(2025a\)](#), I highlighted how tonic-postural regulation, the management of rhythm and pause, and the intentional use of relational space support and strengthen sustained attention and planning, with measurable effects on classroom participation. Similarly, in my contribution on baseball and cognitive functions [Bozzato \(2025b\)](#), I showed that motor contexts with high anticipatory demands (trajectory reading, timing, rapid decisionmaking under constraints) ecologically enhance inhibition, cognitive flexibility, and working memory—the same ingredients that the study in Vitória reveals when physical education lessons are designed through cooperative and graduated approaches.

The comparison therefore points, for those willing to see to a clear direction: the stable integration of physical education within the educational project (PEI/PDP) as an ecological and socially mediated environment, where bodily gestures embody both relationship and meaning.

In operational terms:

- 1) designing motor routines with calibrated intensity and duration, accompanied by immediate feedback.
- 2) employing cooperative formats (roles, stations, peer tutoring) to transform activity into educational mutualism.
- 3) connecting motor–cognitive–relational objectives within formative assessment, valuing individual progress over standardized performance.

It is precisely here that the pedagogist can ensure coherence between clinical frameworks and school practice, translating abstract objectives into observable and replicable actions.

11. THEORETICAL FRAMEWORKS OF REFERENCE

The Brazilian study gains meaning when placed within a framework that interweaves ecological, socio-cultural, and neuropedagogical perspectives. On one hand, [Bronfenbrenner \(1986\)](#) shows that ADHD is not merely an individual condition but the outcome of multilayered interactions— classroom, family, services, policies—that demand connective and mediating work. On the other, [Vygotskij \(1978\)](#) and [Freire \(1996\)](#) point toward a dialogical educational practice, where learning arises from social mediation and the recognition of the student as an active subject. In this sense, [Epstein \(2010\)](#) also underscores the essential value of the school–family partnership.

These perspectives can be enriched with references to libertarian pedagogy and complexity theory: the mutualism of Kropotkin and Faure as a cooperative cognitive device, Reclus's idea of the educating environment, Malatesta's gradualism as an inclusive approach, and the critiques of Illich and Foucault regarding the risk that institutions may turn protocols into instruments of control. Morin and Kuhn, in turn, invite us to interpret ADHD as a complex phenomenon that requires paradigm shifts rather than technical adjustments.

Neuroscience provides decisive confirmations for this horizon: from embodied cognition, which links body and attention, to Laborit's reflections on the regulatory role of action, and to the models of Segev and colleagues on the neural efficiency of networks, which show how meaningful practice reduces cognitive load. Already Piaget and Montessori had emphasized that to know is to act: an operational pedagogical tradition that finds concrete applications in practice and that is reinforced by the constructivist epistemological contribution across domains. Wittgenstein, likewise, reminds us of that routines and school "language games" stabilize shared attention.

Within this framework, I invite professionals to view ADHD not as a disorder or a deficit to be corrected, but as an opportunity to rethink educational practices in an inclusive key. Physical activity, in particular, represents a tool that brings together clinic, pedagogy, and neuroscience: it regulates energy, strengthens attention, enhances social interaction, and, above all, opens cooperative spaces in which difference becomes a resource. This is the true strength of an ecological framework with a libertarian perspective: not to impose norms from above, but to generate educating environments capable of bringing out the potential of each individual.

CONFLICT OF INTERESTS

None.

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