

Review

The Use of Powered Devices to Support Autonomous Mobility in Children with Motor Disability Attending Early Childhood Intervention: Implications for Physical Education and School Inclusion

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Abstract

Mobility in children with motor disabilities is critical to their quality of life because it enhances participation and social inclusion in school and community settings. Recently, early childhood intervention programs have begun incorporating powered mobility devices (PMDs) to promote children's autonomy at an earlier age than before. This study aimed to review the research on PMDs and highlight the implications for physical education and inclusion. Guided by PRISMA recommendations for scoping reviews, a synthesis of the findings from 46 articles published between 2010 and 2025 was conducted. Results indicate that the increasing use of these devices aligns with an emerging shift in professional perspectives toward technology-assisted mobility to improve participation. However, several factors influence the success of PMD implementation, including device type, children's health status, and social, family, environmental, and attitudinal conditions. This shift presents both opportunities and challenges for schools. It is essential for physical education teachers to remain updated on innovations in this field, such as modified ride-on cars, and to strengthen collaboration between schools and early childhood intervention services to overcome physical, social, and attitudinal barriers to inclusion.

Keywords: school; early childhood intervention; mobility; physical education



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1. Introduction

Early Childhood Intervention (ECI) refers to a set of interventions aimed at children aged 0 to 6 years, their families, and their social environment. ECI is designed for children with developmental disorders or who are at risk of developing them and their families, enhancing personal development and strengthening family skills (Guralnick, 2020). Its primary goal is to detect and address any circumstances that may affect their overall development at an early stage (Tollan et al., 2023; Paz-Lourido & Hervás-Torres, 2025). Professional support is crucial for family well-being and quality of life (Marope & Kaga, 2015). Therefore, ECI services should facilitate and enhance the child's overall development, plan and foster social inclusion, and develop capacity-building and parental skills strategies.

Over the past few decades, the conceptualization of ECI has shifted away from a biomedical paradigm centered on children's deficits toward family-centered participatory

approaches (García-Ventura et al., 2023). The International Classification of Functioning (ICF), developed by the World Health Organization in 2001, provides a theoretical framework for understanding and directing interventions in the field of disability (World Health Organization, 2001). The ICF considers not only an individual's health conditions, but also contextual factors that can be modified to facilitate social participation. In the version for children, it emphasizes children's capacities and promotes their autonomy and inclusion (World Health Organization, 2011).

The management of children with motor disabilities has been debated for decades (Wiat & Darrah, 2002), influencing the use of powered mobility devices (PMDs). Initially, PMDs were only recommended after all possibilities for improving children's motor skills had been exhausted, a process that could take several years. PMDs generally include electric-powered wheelchairs (EPWs), powered scooters, and standers. Introducing them early may enhance movement effectiveness when health conditions limit mobility, thereby facilitating children's social participation. Recent frameworks, such as the "On Time Mobility Framework" (Sabet et al., 2022), encourage early PMD access for children with motor disabilities. Independent exploration of the environment has a powerful impact on all children, and PMDs can support this ability. Recent frameworks, such as the "On Time Mobility Framework" (Sabet et al., 2022), encourage early access to PMDs to children with motor disabilities. This is because the ability to explore the surrounding environment independently and take the initiative has a powerful impact on children with or without disability, and PMDs can promote this ability.

ECI services are typically offered to children aged 0–6 in multidisciplinary centers as well as in community settings, including homes. Although some of these children are enrolled in special education institutions, there is an increasing emphasis on their inclusion in mainstream schools (Drudy & Kinsella, 2009). In this context, physical literacy and fundamental movement skills are key milestones in motor development during the later preschool and early primary school years, and many countries include them in their physical education curricula (Buelvas Girón et al., 2025). Psychomotor skills are essential for learning, as they form the basis for body scheme movements and visual-motor coordination. However, they are also considered a holistic experience that promotes inclusion, active participation, and enjoyment through body movement, emotional expression, and the development of autonomy (Rojo-Ramos et al., 2022). Psychomotor activities enrich connectivity between diverse motor and sensory brain areas, enhancing the overall brain performance (Bueno, 2017). This appears to be connected to the secretion of brain-derived neurotrophic factor (BDNF), a protein that promotes neurogenesis and increases synaptic plasticity, thereby strengthening neuronal connections (Guillem & Bueno, 2019). Conversely, a lack of mobility hinders participation in play environments, which are essential for development and a source of motivation that triggers new learning (Gray, 2011; Bornstein et al., 2013). According to the so-called cycle of deprivation (Nisbet, 2002), a reduction in opportunities for play and exploration leads to a reduction in stimuli, which compromises children's experience. This results in a delay that causes frustration, reduces motivation and confidence, which negatively affects opportunities for play and exploration.

The importance of including children with motor disability in physical education lies in the fact that childhood is considered a critical or sensitive period of development with high plasticity. At this stage, the brain is greatly influenced by environmental stimuli and by the individual's experience. Therefore, providing the right stimuli can modify its functioning (Martínez-Morga et al., 2016; Kolb et al., 2017). In this context, environmental enrichment (Morgan et al., 2021) involves increasing the variety and quantity of experiences in one or more of the motor, cognitive, sensory, or social aspects of the child's environment, with the aim of promoting learning through everyday activities (Morgan

et al., 2021; Ball et al., 2019). As far as motor learning is concerned, the generation of neural connectivity patterns, through which this learning materializes, requires the implementation of a variety of variants of the same motor pattern. It is essential that children are supported in finding spaces for exploration and experimentation of their motor behaviors (Mannino & Robazza, 2018).

Inclusive physical education guarantees the participation of all students and overcomes the limitations of the motor approach. It contributes to improving the emotional and physical well-being (Cedeño-Jama & Rodríguez-Zambrano, 2024; Proenza-Pupo, 2020). Despite physical education being promoted as a key setting for facilitating inclusion in schools, research has shown that many children with motor disabilities are often excluded from physical education (Tarantino & Neville, 2023), missing out on its crucial role in shaping a sense of belonging and inclusiveness in childhood (García et al., 2020). Previous research also highlights the challenges of transitioning from pre-school to primary education for children with disability and their families, which can persist over time (Janus et al., 2008; Tithi et al., 2022). Teachers' perceptions, attitudes, and self-efficacy, as well as the broader school context in which they work, may hinder the inclusion of these children (Obrusnikova, 2008; Tarantino & Neville, 2023).

The evolution of multidisciplinary interventions in ECI and the incorporation of PMDs at an early age in children with motor disabilities affect all areas of their participation, including schools. These developments require further investigation.

2. Materials and Methods

Given the novelty of this topic, a scoping review was selected as the most appropriate methodology. The objectives of this study were twofold: (1) to collect and synthesize existing scientific literature on the use of PMDs in early interventions and (2) to identify gaps in knowledge and provide preliminary recommendations for schools. The rationale for the search strategy and critical appraisal was to locate studies related to the early prescription and use of PMDs, focusing on potential implications for school inclusion and physical education. This scoping review followed the PRISMA-ScR (Tricco et al., 2018) guidelines. The initial approach to the phenomenon was structured using the PICO framework (Table 1). Subsequently, the SPIDER framework (Table 2) complemented the search strategy to focus on qualitative studies, which were particularly relevant to this study as they incorporated the perspectives of families and early intervention professionals. Keywords were transformed into DeCS descriptors (2025). Searches were carried out in the EBSCOhost metasearch engine, PubMed, and IBECs databases, as well as the PEDro review database, with appropriate adaptations for each database. A snowball search was also conducted to identify additional records that could improve understanding and enrich the state of the art. The publication period was limited to 2010–2025 to ensure access to the most recent publications in both English and Spanish.

The inclusion criteria were as follows: (a) Population: children with disabilities or motor impairments under the age of five (preschool age); (b) Intervention or phenomenon of interest: use of any type of powered mobility device; and (c) Types of records: qualitative and quantitative studies, reviews, or documents reporting on device design or testing. Exclusion criteria included studies involving adults or children over five years of age and records concerning non-powered mobility devices.

Descriptors and free-text terms were combined using the Boolean operators AND and OR, applying AND between conceptual levels and OR between synonyms to conduct a comprehensive search. The search equations are presented in Table 3.

Table 1. PICO structure.

	Keywords	Descriptor DeCS, 2025	Free Term
P (Population)	children with motor impairment	disabled children, developmental disabilities, mobility limitation	-
I (Intervention)	wheelchair, electric/motorized mobility devices	wheelchair, motorized mobility scooter	mobility aid, mobility device, power mobility, ride on car
C (Comparison)	-	-	-
O (Outcomes)	child development, participation, autonomy, functionality	child development, social participation, personal autonomy, functional status	-

Table 2. SPIDER structure.

	Keywords	Descriptor DeCS, 2025	Free Term
S (Sample)	children with motor impairment and their families	disabled children, developmental disabilities, mobility limitation, family	-
PI (Phenomenon of interest)	wheelchair, electric/motorized mobility devices	wheelchair, motorized mobility scooter	mobility aid, mobility device, power mobility, ride on car
D (Design)	interview, focus group, participatory action research	interview, focus groups	participatory action research
E (Evaluation)	experience, attitudes	attitude	experience
R (Research type)	Qualitative studies	qualitative research	qualitative method

Table 3. Equations.

EBSCOHOST PICO
(disabled children OR developmental disabilities OR mobility limitations) AND (wheelchair OR motorized mobility scooter OR mobility aid OR mobility device OR power mobility OR ride-on-car) AND (child development OR social participation OR personal autonomy OR functional status)
EBSCOHOST SPIDER
(disabled children OR developmental disabilities OR mobility limitations OR family) AND (wheelchair OR motorized mobility scooter OR mobility aid OR mobility device OR power mobility OR ride-on-car) AND (interview OR focus groups OR participatory action research) AND (attitude OR experience) AND (qualitative research)

3. Results

The compilation process began by removing duplicate records ($n = 597$) and excluding studies outside the scope of this review based on their titles and abstracts ($n = 422$). The remaining articles then underwent an in-depth evaluation. Of these, 129 were excluded for the following reasons: full-text articles that did not match the purpose of this review in terms of topic, population, or intervention ($n = 92$); articles with insufficient information ($n = 12$); records consisting of conference abstracts, thesis reviews, or commentaries not relevant to this study ($n = 19$); and records that could not be retrieved ($n = 6$). The remaining 46 articles were included in the final scoping review (Figure 1).

This section presents a synthesis of the results divided into subsections to illustrate the state of the art regarding powered mobility devices highlighting elements particularly relevant for inclusion in schools.

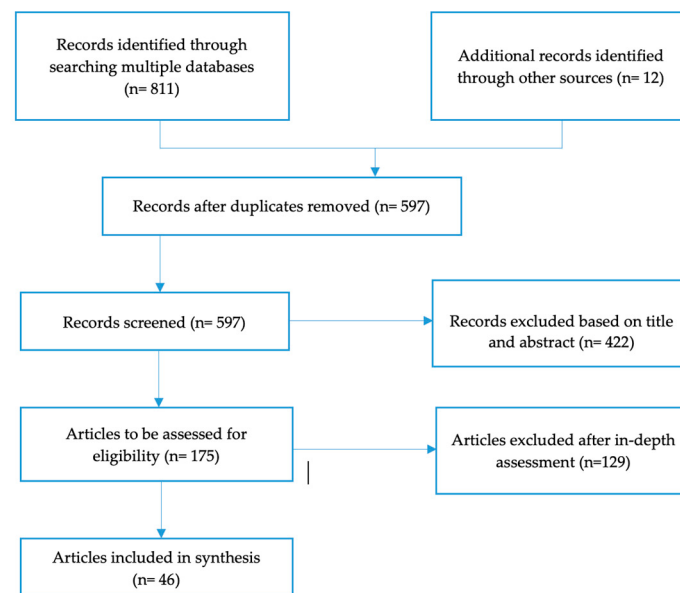


Figure 1. Scoping Review flux diagram.

3.1. Types of Devices

In addition to the well-known electric-powered wheelchairs (EPWs), which are available in multiple models, there are various powered mobility devices (PMDs) specifically designed to be child-friendly. These are typically prescribed for children with severe motor impairments or inefficient mobility due to developmental delays (Livingstone & Paleg, 2014; Rosen et al., 2018). Particular attention should be given to modified ride-on cars (MROCs). In 2006, the program Go Baby Go! was founded at the University of Delaware (USA) to modify and adapt conventional Powered Kids' Electric Vehicles (PKEVs)—commercially available in toy stores—into MROCs. Adaptations included seating supports and restraints, as well as the installation of a joystick to enable the child to operate the vehicle (Huang & Galloway, 2012; Aceros & Lundy, 2020). Another adaptation involved placing a button under the seat to encourage children to stand up and activate the car (Logan et al., 2017). In both cases, children could initiate movement themselves, thereby increasing their sense of control and mobility (Rosen et al., 2018).

Go Baby Go! has become an open community initiative implemented in multiple regions (Martin & Dischino, 2017). It is estimated that more than 5000 cars have been adapted worldwide (Logan et al., 2019), with feasibility studies launched in countries such as Colombia and Brazil. In Spain, recent initiatives are also underway (Coello-Villalón et al., 2025; Palomo-Carrión et al., 2024). Internationally marketed devices include the Permobil Mini-Explorer® (Plummer et al., 2020), the Wizzy Bug®, the Bugzu by Meru® (Field & Livingstone, 2022), and the Wild Thing by Sealth Products® (Pritchard-Wiart et al., 2019). Another study explored the suitability of the WeeBot®, a device controlled by the child's weight displacement (Stansfield et al., 2018). Finally, a more complex device—an electric train for preschoolers—has also been developed (Sanders, 2017).

3.2. Perceived Benefits and Opportunities

The children included in the selected studies presented mobility limitations and varying degrees of impairment, including complex medical conditions. This aligns with findings identifying these children as the main beneficiaries of PMDs (Logan et al., 2016; Sloane et al., 2023). The review highlights benefits for children's social, language, and cognitive development (Guerette et al., 2013; Jones et al., 2012; Livingstone & Field, 2014; Weinstein et al., 2018; Logan et al., 2014; Cheung et al., 2020), although further research is

needed. Activity and participation levels increased with PMD use (Livingstone & Field, 2014; Hospodar et al., 2021), resulting in greater independence (Livingstone & Field, 2014) and higher levels of collaboration in activities of daily living (Aceros & Lundy, 2020). These positive effects are particularly notable for children with severe disabilities (Aceros et al., 2025). In the light of the studies by James et al. (2019) and Bray et al. (2020), it has been shown that PMDs have a positive impact on ensuring children's self-directed mobility and play (Hospodar et al., 2021). The increasing number of experimental research projects such as that from Huang et al. (2023), is also worth mentioning. These authors propose a randomized clinical trial combining different postures (sitting and standing) in MROCs, compared to a control group. Feldner et al. (2022) aimed to compare the use of the *Permobil Mini-Explorer*[®] with MROCs in terms of children's participation.

However, it is also crucial to address the phenomenon of early powered mobility also from a qualitative perspective. In Pituch et al. (2019), the perceptions of four stakeholder groups were sought: parents; professionals from rehabilitation centers; teachers from special schools; and children, who were asked to express their view through drawings. Feldner et al. (2019) used photovoice to explore the process of acquiring PMDs, including the voices of children as co-researchers. Barreto et al. (2024) followed the same exploratory methodology (photovoice). In this case, the participants were mothers of children with severe motor and cognitive disabilities. A participatory approach was used to develop assessment tools for powered mobility, enabling a collaborative shared process between experts and users (Kamaraj et al., 2014). It is important to highlight when it comes to children's participation levels, parents' observations and experiences are crucial for assessing the adequacy of PMDs in different environments (Field et al., 2015). The study by Wiart et al. (2004) found that mothers perceive their children's use of powered wheelchairs as enhancing independence, increasing participation in meaningful activities, and facilitating more positive social relationships with peers.

Parents identify MROCs as a fun device and a therapeutic intervention that enable their children to explore the environment with greater confidence, wonder, and joy, and report improvements in the socio-emotional sphere (Barchus et al., 2023). In addition, Livingstone and Field (2015) provide a review that offers evidence of the benefits for children and families, while Currier et al. (2019), based on grounded theory, offer a model of how the EPW is used to develop the child's competence and parents' experience. This model suggests that the device acts as a catalyst of this device in the medium and long term.

3.3. Environmental and Physical Barriers or Limitations

PMDs have been used in various locations, including ECI centers, homes, hospitals, and schools (Ross et al., 2018; Huang et al., 2018; Hospodar et al., 2021), demonstrating the wide range of factors involved in the physical, social, and attitudinal domains and underscoring the need for context-specific strategies to ensure effective implementation and inclusion.

- Physical barriers

Small spaces, inaccessible buildings and unfavorable land and weather conditions are among the physical barriers (Livingstone & Field, 2015). These barriers can present an economic challenge for some families, as they may need to make architectural modifications or ensure the transport of the devices (Cury et al., 2013). This is a significant barrier that negatively impacts parents' experience of using the devices (Logan et al., 2020a). While EPWs are characterized by being large, heavy, and expensive (Feldner et al., 2016), MROCs and other PMDs are more manageable. Other limitations include excessive noise, battery life, and acceleration capacity (Pritchard-Wiart et al., 2019; Logan et al., 2020b), which operation on certain pavements.

- Attitudinal barriers

For parents, negative attitudes encompass beliefs and hopes regarding their children's future ability to walk, which can hinder the acceptance of assistive technology (L. K. Kenyon et al., 2018a). The child-friendly design of MROCs helps to dispel the stigma associated with disability (Barchus et al., 2023) and could contribute to a new perception of disability (Feldner et al., 2019). Children experience joy and pride in being able to move on their own, but also frustration, anxiety, and despair when the PMD does not reach their expectations (L. K. Kenyon et al., 2018a). It is worth mentioning that families' perceptions can change over time (L. K. Kenyon et al., 2025). For this reason, it is recommended that several types are tested before a definitive one is provided, bearing in mind that the experience of parents, children and professionals will influence their satisfaction, acceptance and use (Field & Livingstone, 2022).

- Social barriers

These include the rules, administrative procedures and political priorities by which social services are governed. On many occasions, these are seen as a barrier to overcome rather than as opportunities (Livingstone & Field, 2015). The high cost of commercial PMDs for many families is one of the factors that restrict their use. The acquisition, financing and coverage processes differ in each country and context (L. K. Kenyon et al., 2018b). It should be noted that the decision to buy a PMD may entail an emotional process for the family (Feldner et al., 2019). MROCs seem to offer a gentle introduction to powered mobility, similar to other child-oriented models such as the Wizzy Bug® (Pritchard-Wiart et al., 2019).

3.4. Children and Family/Informal Care Factors

According to Logan et al. (2020a), children's experiences with PMDs and MROCs vary depending on health conditions (e.g., illness, fatigue, or recovery from surgery), individual tolerance (e.g., responses to movement, sound, or acceleration, or a lack of enjoyment), and motor or cognitive delays (e.g., lack of trunk control, vision difficulties, or limited understanding of cause and effect). Additional family- or caregiver-related factors include limited time and physical constraints, which may complicate activities such as transferring children in and out of MROCs. Therefore, the interaction between people, technology, activity, and environment is of utmost importance (Rousseau-Harrison & Rochette, 2013). Families may be motivated to obtain a PMD to enhance the child's mobility at home or improve family quality of life rather than primarily to foster socialization.

3.5. Professional Beliefs

Although ECI professionals and families should be aware of and discuss the timing and convenience of PMDs, incorporating them into children's routines is often delayed. Understanding the beliefs, attitudes and barriers of professionals regarding practice enables these devices to be incorporated more effectively in line with family needs, the child's psychomotor development and the therapeutic approach. Studies have reported negative attitudes among ECI professionals towards the MROCs (Livingstone & Field, 2015). Professionals and families often consider the use of PMDs to be a last resort (L. K. Kenyon et al., 2018a), although some studies have highlighted positive attitudes towards them among physiotherapists and occupational therapists (L. Kenyon et al., 2018).

4. Implications

PMDs are designed to enable children with motor disabilities to achieve autonomous mobility, which positively affects their development, quality of life, and well-being. Recognizing mobility as a human right and valuing families' daily experiences are essential first steps in determining the suitability of PMDs for each case (Feldner et al., 2016). The

findings indicate that different conditions determine PMD use, satisfaction, and effectiveness, underscoring the need to assess children's specific needs (Sotalin-Ortiz et al., 2025). The synthesis also highlights the importance of collaboration among professionals working with young children, which is crucial for integrating perspectives and involving families (Masabanda-Naranjo et al., 2025).

Physical, social, and attitudinal barriers to the use of PMDs by children with motor disabilities can restrict participation, as identified in the ICF (World Health Organization, 2011). Parents report barriers related to transport, the type of assistive devices, and architectural design, all of which affect diverse community settings (Kang et al., 2017). Addressing these barriers is essential to ensure inclusion, as the physical characteristics of the school and the attitudes of teachers and peers can determine the extent of participation for children who use PMDs. The study by L. K. Kenyon et al. (2020) illustrates that both age and cognitive skills are critical factors when determining readiness for pediatric power mobility, highlighting the importance of individualized assessment.

Motor disability poses challenges for children, their families, and schools, which can jeopardize children's inclusion and education (Tavares & Loução, 2024; Paz-Lourido et al., 2020; Douglas et al., 2022). A key question is whether the use of PMDs can mitigate these challenges. However, inclusion depends on multiple factors, such as children's adjustment during the first year of school, personal and background characteristics, school-based transition activities, preschool and early school experiences, and the presence or absence of friends (Margetts, 2002). The attitudes of peers and other school members toward diversity are critical to creating an inclusive climate, as negative attitudes can undermine well-intentioned strategies (Hutzler & Levi, 2008; Tanure et al., 2018). Although social interactions in inclusive physical education can be beneficial, social isolation, exclusion, and a lack of belonging among students with motor disabilities remain concerns (Qi & Ha, 2012; Rekaa et al., 2018). This must be considered when discussing the inclusion of children who use PMDs.

It is known that families' perceptions of ECI vary not only according to the type of service provided (Verger et al., 2021) but also according to their beliefs about child development and their cultural background (Acar et al., 2021). This review shows that family attitudes and beliefs can influence whether children with motor disabilities gain early access to PMDs. These attitudes may evolve over time, highlighting the need for support and guidance when facing challenging decisions. Families of children with motor disabilities often encounter complex situations that require multiple community resources (Cunha de Araújo et al., 2016) and may experience anxiety, depression, and other conditions due to caregiving demands (Verger et al., 2020; Bagur et al., 2022a, 2022b).

Teachers' beliefs and inclusion policies also influence children's inclusion in school settings (Fitzgerald, 2006; Tanure et al., 2017; van Rhijn et al., 2021). Building on Hutzler et al. (2019), physical education teachers should be aware of the factors that influence their attitudes and self-efficacy regarding the inclusion of children with motor disabilities. These factors include teaching experience, professional and academic training in inclusion, school environmental conditions (e.g., a process-oriented rather than a performance-oriented approach), and the characteristics of the children and their families. This issue warrants further exploration with respect to school inclusion of children using PMDs.

Psychomotor activities aim to promote independent movement to enhance self-efficacy, self-esteem, and social cohesion within groups, but they can also impact their physical activity and health trajectories (Dobell et al., 2023). For children with motor disabilities, it is important that teachers understand PMD types, listen to families, and collaborate with ECI centers. This approach enables longitudinal monitoring of children's experiences with PMDs and supports necessary adjustments. Long-term partnerships of this kind (Kambouri

et al., 2022) can foster child-friendly design adaptations (Currier et al., 2019). Physical education teachers can also guide innovative leisure activities and encourage families with PMDs to socialize with other families and students outside of school, for example, through appropriate sports or outdoor activities.

Schools may require structural changes to improve access for children using PMDs (Table 4). Such adaptations could include improved paving, widened access points, ramps, and modifications to classrooms, laboratories, and bathrooms. Accessibility considerations should also extend to the surrounding school environment and outdoor activities on unpaved terrain. Another requirement is identifying recharging points during the school day, visits, or excursions.

Table 4. Implications for schools.

Area	Actions
Adaptations in Built and Outdoor Environments	Improve flooring (e.g., non-slip surfaces). Ensure clear pathways. Adapt access points (e.g., wider doors, access ramps). Implement adaptations in classrooms, laboratories, and bathrooms. Provide charging points for PMDs.
Awareness and Capacity-Building	Promote activities aimed at teachers, school staff, families and peers (e.g., training on PMDs, strategies to promote inclusion, fostering a supportive classroom culture, stress reduction).
Curriculum Adaptations and Assistive Technology	Evaluate and implement curricular adaptations. Assess the need of alternative and/or augmentative communication technology. Use specialized equipment and assistive tools to increase engagement.
Inclusive Physical Education	Adjustment of rules and goals; provide a variety of choices in activities. Break down skills and use of peer-buddy systems. Offer activities based on children's strengths when using PMDs. Foster a sense of joy and belonging.
Professional Support and Family engagement	Involve support staff (e.g., physiotherapists, occupational therapists, teacher assistants). Establish collaboration and coordination protocols with ECI services. Promote family engagement and communication.
Policies and Administration	Co-create specific norms and routines of co-existence (e.g., regarding speed, noise, safety distance, comfort) Include PMDs in the school safety protocol (e.g., insurance and emergency procedures).

In addition, clear rules on the speed and use of these devices inside and outside classrooms are needed. Other strategies to support inclusion include helping families develop parenting skills, reducing stress, and raising awareness among classmates. Addi-

tional curricular adaptations may also be necessary, as children who use PMDs may have other developmental disabilities. Emphasizing the child's abilities and strengths can foster resilience and motivation.

Using a PMD involves a learning process for children (L. K. Kenyon et al., 2017; Field & Livingstone, 2018) and therefore requires professional guidance, which should also be extended to others who share spaces with the children to ensure safety and effective participation. Providing training on PMDs can give teachers confidence, alleviate families' concerns, and enable children to participate safely and independently. In some cases, schools include physiotherapists or assistant professionals who can help prepare families and teachers for the child's transition to school (Lehrer et al., 2017). In all cases, a needs assessment will enable the development of individualized intervention plans aligned with inclusion policies.

As a limitation of this study, it should be noted that the search focused specifically on the early incorporation of PMDs, and the results were synthesized and interpreted with consideration of issues relevant to the transition of these children to school, particularly the potential role of physical education. Further research in diverse social environments for children, including schools, is needed, as the impact of PMDs on the inclusion of children with disabilities remains an underexplored area. The implications drawn from the literature need to be examined in light of the specific context and other influencing factors.

5. Conclusions

Children with motor disabilities can achieve autonomous mobility at an early stage using powered mobility devices, which enhances their quality of life. It is important for interprofessional Early Childhood Intervention teams and families to understand both the potential advantages and the barriers associated with powered mobility devices. Incorporating these devices into children's lives requires a collaborative decision-making process between professionals and families, which in turn has implications for school practices, resources, and inclusion policies. Given the importance of physical education for children's development and school inclusion, removing barriers to participation is essential for children who use powered mobility devices. As this is an emerging field, further studies are needed to help families and professionals identify the relevance of powered mobility devices in specific contexts and to determine the most appropriate type of powered mobility devices, taking into account children's preferences. Although having a powered mobility device can increase children's participation at school, it is crucial to establish norms and conditions to maximize the benefits and to provide training for teachers and staff. This requires ongoing communication and collaboration between Early Childhood Intervention professionals and teachers, as well as longitudinal monitoring and evaluation of children's experiences. Future research should explore how powered mobility devices can be more effectively integrated across early intervention and school settings to promote equitable participation and inclusion for children with motor disabilities.

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Abbreviations

The following abbreviations are used in this manuscript:

ECI	Early Childhood Intervention
PE	Physical Education
ICF	International Classification of Functioning, Disability and Health
PMD	Powered Mobility Devices
PKEV	Powered Kids Electric Vehicles
MROC	Modified Ride-On Cars
EPW	Electric Powered Wheelchair
WHO	World Health Organization

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