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**Review Article**

## **Inclusive practices for students with disabilities in physical education classes: A literature review**

**Short title:** Physical education for students with disabilities

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## **Abstract**

The aim of this literature review was to identify effective inclusion practices for students with disabilities in international school physical education. The PRISMA methodology was employed, which, through the research question, enabled the identification of emerging categories based on inclusion and exclusion criteria. A total of 45 articles met the selection criteria. Based on their empirical results, a classification was made into two main dimensions related to inclusive practices, both inside and outside the physical education classroom. Additionally, each dimension identified various categories to identify key effective inclusion practices in school physical education. The identification and categorization of these inclusive practices allow for an analysis of the various inclusive strategies reported in the literature, highlighting the main areas of interest in recent years, namely: emotional support in the physical education class, organization of the space or location where the physical education class is conducted, pedagogical support during the class, the educational project of the school, public policies related to the inclusion of students with disabilities focused on school physical education, and the initial training of physical education teachers. Future research should focus efforts on involving parents, guardians, and/or caregivers of students with disabilities, as well as on distinguishing the individual characteristics of each type of disability within the diversity of students in the school stage.

**Keywords:** inclusion, disability, school physical education.

## Introduction

Issues related to the promotion of Inclusive Education are on the agendas of many developed and developing countries. Efforts by international organisations such as UNESCO with its Education For All program (UNESCO, 2001) and the United Nations with the Convention on Human Rights for persons with disabilities (UN, 2006), encourage the development of initiatives that provide educational opportunities for all students regardless of their origin, financial situation, gender and/or disability (OECD, 2007).

Based on the Declaration of Human Rights for Disabled Persons (UN, 2006), the student is understood from a bio-psycho-social perspective through three main domains, namely: biological approach, relating to their health condition and personal medical features; psychological aspects where the students' beliefs, thoughts, and emotions play a fundamental role (Fierro & Contreras, 2024); and the social approach, in which the main focus is not on the person with a disability, but rather on how the environment (teacher, classmates, educational community in general) could generate facilities or obstacles in learning process of students who present some kind of disability. The concept of "person with a disability" is currently defined, according to the United Nations Convention on the Rights of Persons with Disabilities, under a social model. This perspective establishes that disability arises from the interaction between a person's long-term impairments (physical, mental, intellectual, or sensory) and various attitudinal and environmental barriers. This interaction is what prevents their full and effective participation in society on equal terms. This approach seeks to shift attention from individual "deficiency" to eliminating barriers that limit inclusion, thereby promoting equity and human rights.

As a result of this social approach, inclusive and school-based physical education is studied, specifically through the efforts of teachers and the educational community at large in developing inclusive school practices implemented in the educational context of students with or without disabilities (Fierro & Treviño, 2023).

In this case, the physical education teacher plays a key role as a facilitator of inclusion (Overton et al., 2017) by developing methodological strategies that effectively include all students. It is known that inclusive practices in the physical education class not only benefit the learning of students with disabilities but also reinforce the interpersonal skills of their peers, increasing their awareness and knowledge of disabilities and the democratic social participation necessary in other areas of the human sphere (Qi & Wang, 2018).

Research on inclusion in the learning process has so far focused on ensuring educational spaces for students with disabilities in regular schools (Fernandez et al., 2019). Nevertheless, the relationship between the various elements, disaggregated into methodological strategies, could facilitate the realisation of educational inclusion for students with disabilities that have not yet been studied, thereby enabling the establishment of the real benefits of the physical education inclusion process. In conjunction with this, several authors (Wang, 2019; Capiro et al., 2015) emphasise the need for international research that organises and relates the factors of inclusion and, at the same time, deepens into the methodological strategies within the physical education class.

These methodological studies are considered as a guideline of actions and behaviours established by the physical education teacher on a conscious and intentional basis, aimed at fulfilling a teaching objective (Ainscow & Miles, 2008).

Despite the growing attention paid to inclusion in physical education, there remains a notable gap in the literature that systematically addresses the interconnectedness of the multiple factors that influence this process. There is a critical need to understand how microsystemic elements (such as teachers' pedagogical strategies, infrastructure, and classroom-specific resources) interact with and are influenced by macrosystemic factors, including school-level institutional management and public education policies.

A comprehensive problematization of these levels of influence is essential for the development of truly holistic and sustainable inclusion strategies.

The present study aims to identify effective inclusion practices for students with disabilities in the context of international school physical education by analysing the available literature. Addressing this topic is crucial to ensuring more equitable and inclusive educational environments where students' diverse abilities are recognised and valued.

The literature on inclusion in physical education demonstrates significant progress in terms of approaches and strategies, yet challenges remain regarding the implementation and effectiveness of these practices in diverse school contexts (Gable, 2014). This study not only compiles and organises relevant information but also proposes categories that facilitate a deep understanding of the factors that promote inclusion, enabling the identification of existing gaps in current research. This review addresses the need to recognise, organise, and categorise the diverse inclusive educational practices observed in the school context, aiming to identify which specific practices

for the inclusion of students with disabilities in school physical education have been identified as effective in the academic literature from 2015 to 2024.

Effective practices will be understood as pedagogical and methodological strategies that have demonstrated positive and verifiable results in the inclusion of students with disabilities in school physical education (Fierro-Saldaña, 2024). These may include, for example, practices that promote active participation by these students, foster the development of physical and social skills, and contribute to an inclusive and equitable environment.

Moreover, the study can also contribute to teacher training by recognising teachers as key actors in student learning (Contreras & Fierro, 2024) and advancing inclusive practices among physical education teachers. Finally, the application of the study's findings could promote multiple health benefits, both individual and social (World Health Organisation, 2004).

This literature review aimed to characterise effective inclusion practices implemented in school physical education in various international contexts, aimed at students with disabilities.

It is postulated that the effectiveness of inclusion practices in school physical education for students with disabilities in international contexts lies in the convergence of specific pedagogical characteristics and key organisational factors, which together promote meaningful participation and comprehensive development.

## **Methodology**

### **Identification of studies**

To address the research question, a mixed or integrative approach was employed, allowing for the exploration and synthesis of a wide range of evidence to uncover emerging categories or themes in the reviewed literature. This review adheres to the PRISMA guidelines and follows the fundamental principles of transparency, rigour, and clear presentation of results. The steps taken included: formulating the research question, conducting a systematic literature search, identifying emerging categories, critically evaluating the quality of methodologies, presenting the results clearly through dimensions and categories, and ensuring ethical and quality considerations.

### **Search procedure**

The databases Web of Science, Scopus, and PubMed were used. This selection is justified because PubMed is a key database for health, well-being, and medical topics, which are crucial to studying

inclusive practices for people with disabilities. It includes studies on physiology, motor development, and necessary adaptations for exercise in populations with functional diversity (Fierro & Contreras, 2024). Regarding Scopus, it is one of the most comprehensive and multidisciplinary databases, ideal for a thorough literature review. Scopus covers research across fields such as education, the social sciences, and health, enabling a holistic approach to inclusion in Physical Education that addresses both pedagogical and professional practice.

Finally, Web of Science, with its international coverage and high-quality standards, is excellent for ensuring a literature review that includes high-impact studies. Additionally, it provides a strong representation of research in the fields of education and social sciences, which are essential for evaluating inclusive practices in the educational context.

Each database provides a different perspective, and when combined, allows for a comprehensive and balanced review of studies on inclusion in Physical Education, ensuring the relevance and quality of the selected studies.

## **Inclusion Criteria**

The literature review included articles published between 2015 and 2023. This time range was chosen to ensure inclusion of recent, relevant studies that reflect advancements and current trends in inclusive Physical Education practices for students with disabilities. This period covers a decade of contemporary research, reflecting current developments in educational policies, theoretical frameworks, pedagogical approaches, and understandings of disability and inclusion. This is crucial for the study's findings to be applicable and meaningful in the current context of educational practice.

The keywords used were: "physical education," "disabilities," "inclusion," and "special education needs." The Boolean operator "physical NEAR/0 education" was used to narrow the results specifically to this subject. This search yielded 250 articles related to the topics described above. Selecting these keywords was essential for developing a comprehensive and precise search strategy, ensuring the retrieval of literature directly relevant to the review objective. "Physical education" and "disability" delineate the field of study and the target population, respectively. The term "inclusion" is central to capturing studies that address practices and integration. Likewise, the inclusion of "special educational needs" was vital, as it is a widely used concept in education to refer to students who require additional support, including those with disabilities, thus ensuring

broader and more relevant coverage of the available literature in diverse regions and language contexts.

## **Exclusion Criteria**

To filter the number of articles found, the following criteria were applied:

- 1. Focus on specific health conditions:** Studies solely focused on specific health conditions (such as skin diseases, heart diseases, obesity, cancer, or other medical conditions) that were not directly related to inclusive practices in school physical education were excluded. Studies on specific health conditions are excluded because they divert the pedagogical and organisational scope of the review, introducing clinical variables that go beyond the purpose of understanding widespread inclusion in the school context.
- 2. Absence of empirical results:** Studies that did not present empirical data on school inclusion strategies in physical education were excluded. This included research focused only on program evaluations, policy analysis, or research that did not address practical inclusion strategies implemented in school settings. Theoretical articles, essays, expert opinions, letters to the editor, or previous reviews are excluded. While valuable for context and discussion, they do not provide direct data or original findings that can be analysed and synthesised to answer the research question about the effectiveness of the practices.
- 3. Study population outside the school context:** Studies focused on adults, preschoolers, fitness, or competitive sports were excluded, with only research related to physical education in school contexts being included. Studies conducted in non-educational settings were excluded to maintain the relevance of the findings to the pedagogical, curricular, and organisational particularities of the formal education system.
- 4. Lack of complete results:** Only studies that provided complete and accessible results for analysis were included. Studies that did not report raw data and only provided authors' interpretations or discussions were excluded. They were excluded because they did not present all the data and methodological information necessary for a complete extraction and evaluation of their results relevant to the research question. This ensures that only studies that allow a thorough understanding of their findings and their contribution to the evidence base are included.

A set of precise filtering criteria was meticulously considered and applied for the selection of studies in this literature review. These include the time frame of publications, accepted languages, relevant methodological designs, specific characteristics of the study population, the phenomenon of interest or intervention analysed, the context in which the studies were conducted, and the type

of publication. Each of these criteria was rigorously defined and justified (in inclusion and exclusion criteria) to ensure the relevance, quality, and adequacy of the evidence included in our analysis.

### **Critical analysis procedure**

To ensure the reliability and rigour of this review's findings, the methodological quality of the included studies was systematically assessed using the Critical Appraisal Skills Programme (CASP) templates. This tool allowed for a standardised critical analysis of the validity, results, and applicability of each study, ensuring that only the most robust and relevant evidence was incorporated to answer our research question. Through this system, the reliability of the study is also guaranteed. Aspects reviewed included:

- Methodological design: It was verified that the studies met an appropriate design to address their research objectives.
- Clarity in describing inclusive strategies: Only studies that explicitly described the strategies used in inclusive practices in school physical education were included.
- Rigour in presenting results: Articles that provided clear empirical results, distinguishing between raw data and the authors' interpretations, were prioritised.
- Transparency and replicability: The consistency in the methods and the potential to replicate the studies with the presented information were valued.

Specifically, the templates "11 CASPe Questions to Understand a Qualitative Study" and "11 CASPe Questions to Understand a Cohort Study" were used as appropriate for each research design. The evaluation was conducted by two independent reviewers, and any discrepancies were resolved through discussion and consensus. This process allowed us to assess the validity, rigour, and applicability of each study's results, identifying potential biases and limitations that were taken into account in the evidence synthesis. The use of these criteria ensures that the findings presented in this review are based on high-quality evidence, contributing to the reliability of the conclusions drawn.

Of the total articles, only 45 met the aforementioned exclusion criteria and will be included in the results of this literature review.

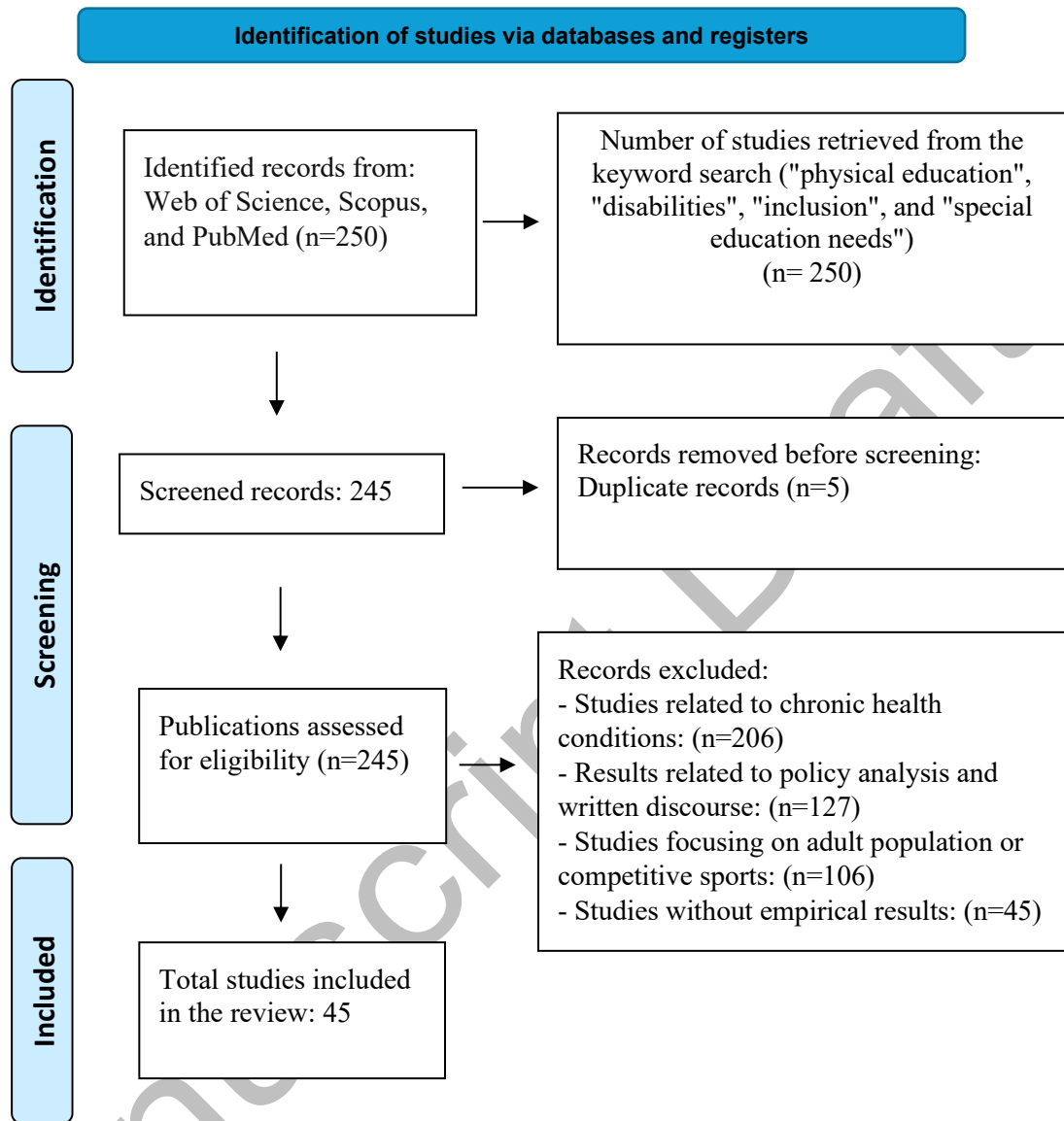


Figure 1. PRISMA flowchart with overall study results

## Data extraction

The main data from each eligible study were extracted by a single reviewer into a Microsoft Excel spreadsheet. Data elements included:

1. Initial Reading and Familiarisation: In the first stage, a thorough reading of the full texts of the selected articles was conducted. This step allowed for the identification of the objectives, methods, and main results of each study, with particular emphasis on those that detailed inclusive strategies applied in school settings.

2. Coding: Based on familiarisation with the data, coding was carried out, where descriptive labels were assigned to text fragments addressing key elements related to the study topic. The initial labels included terms such as "curricular adaptations," "teacher perceptions," "physical accessibility," and "teacher training in inclusion."
3. Grouping and Categorisation: The generated codes were inductively grouped into broader categories, guided by Booth & Ainscow's (2002) conceptual framework of inclusive education. This process allowed the data to be organised into three main categories: Macrosystemic factors, mesosystemic factors, and microsystemic factors.
4. Category Validation: To ensure the validity and consistency of the analysis, the categories were reviewed by a group of peer researchers. Additionally, they were compared with the theoretical framework to ensure their alignment with the key concepts of inclusive education.
5. Use of Organisational Tools: The analysis and categorisation process was managed using Excel matrices, which facilitated the grouping of data and allowed for the identification of the frequency with which inclusive strategies appeared in the selected studies.

It is important to note that the categorisation may have been influenced by the specific focus of the included studies. However, the validation process and the use of a solid theoretical framework helped minimise potential interpretative biases. The main findings from the selection of the studies show that a large number of them do not refer to inclusive practices but rather to theoretical guidelines and policies related to the inclusion of students in the physical education classroom (see Figure 1).

### **Coding process**

Following the final selection of studies, a rigorous coding process was conducted to extract and categorise relevant information. This process was done manually, using a structured Microsoft Excel spreadsheet to organise and systematise the data. This allowed for a systematic arrangement of the identified factors and pedagogical practices that influence inclusion in physical education. Categorisation was carried out along two main dimensions, whose categories were established

through a mixed approach: deductive for the systemic levels and inductive-deductive for the practices.

First, the findings were classified according to systemic levels of influence, categories that were deductively applied based on an adaptation of Bronfenbrenner's (1979) ecological model. This involved: Microsystemic Factors: Those elements directly related to the immediate environment of the student and the teaching staff;

Mesosystemic Factors: Elements that involve the interconnections between microsystems, such as school management and leadership, and Macrosystemic Factors: Aspects related to the broader socio-political and cultural context.

Second, a distinction was made between practices implemented inside and outside the physical education classroom. This distinction was established deductively based on the objective of the review, complemented by an inductive identification of subcategories as the data were analysed.

## Results

The total number of studies retrieved from the databases was 45. After selecting the studies included in the review, a manual search of their bibliographies was conducted, yielding no additional studies, either because they did not meet all eligibility criteria or because they were already included in our study. The flowchart, according to the PRISMA methodology, is shown in Figure 1. Below is a summary of the descriptive characteristics of the articles reviewed, which present a series of effective inclusion practices primarily developed inside (36 studies) and/or outside the classroom (18 studies) (Table 1). The grouping of inclusive practices carried out in the physical education classroom can be classified into three dimensions: emotional strategies, classroom space organisation, and pedagogical support (see Table 2).

Table 1. Report by type of inclusive practice, school level and type of disability

Reference by author	Practices inside the classroom			Practices outside the classroom		Primary	Secondary	Type of Disability
	Emotional Support	Space Organization	Pedagogical Support	Educational Institution	Public Policy			
Ackah-Jnr & Danso (2019)		X		X		X	X	Motor/Physical
Al Salim, Gorman, & Lirgg (2018)	X					X	X	All of them
An & Meaney (2015)	X				X			All of them
Anokwuru, (2016)		X	X			X		Cognitive
Bertills, Granlund, Dahlstrom, & Augustine (2018)	X		X			X		Physical and
Canales et al. (2018)	X		X			X	X	Cognitive
Columna et al. (2016)	X					X	X	All of them
Davis, Haegele, & Zhu (2017)	X	X	X	X	X	X	X	All of them
Gobbi, Greguol, & Carraro, (2018)	X		X			X		Cognitive
J. A. Haegele, Hodge, Barbosa, & de Rezende (2018)				X	X	X	X	All of them
Hodge, Haegele, Gutierrez Filho, & Lopes, (2018)	X	X	X			X	X	All of them
Jin, Yun, & Agiovlasitis, (2018)	X					X	X	Motor
Kiuppis, (2018)			X			X	X	All of them
Laughlin, Murata, & McDougall, (2019)			X			X	X	Motor
Lautenbach & Antoniewicz, (2018)	X					X	X	All of them
Lee, (2016)					X	X	X	All of them
Lieberman, Brian, & Grenier, (2019)	X					X	X	All of them
A. J. Maher, (2017)			X			X	X	Cognitive
A. Maher, Morley, Fimusanmi, & Ogilvie, (2019)					X	X	X	All of them
A. J. Maher, (2016)			X	X		X	X	All of them
Majoko, (2019)	X	X	X	X	X	X		All of them
McKay, Block, & Park, (2015)	X	X	X			X	X	All of them
Overton, Wrench, & Garrett, (2017)		X	X			X		Motor
Petrie, Devcich, & Fitzgerald, (2018)	X		X			X	X	All of them
Qi, Wang, & Ha, (2017)				X	X	X	X	All of them
Qi & Wang, (2018)	X						X	All of them
Reina, Hutzler, Iniguez-Santiago, & Moreno, (2019)	X						X	All of them
Ring, Kristen, & Klingvall-Arvidsson, (2019)	X		X	X		X	X	All of them
Sit, Yu, Wong, Capio, & Masters, (2019)			X			X		Motor
Taliaferro, Hammond, & Wyant, (2015)					X	X	X	Motor
Tanure Alves et al., (2017)		X	X		X	X	X	Motor
Wang, (2019)	X		X		X	X	X	Motor
Wang, Qi, & Wang, (2015)	X					X	X	All of them
Wang, Wang, & Wen, (2015)	X	X				X	X	Cognitive
Wilhelmsen, Sorensen, & Seippel, (2019)	X					X	X	All of them
Yan & Deng, (2019)					X	X	X	All of them
Abellan Hernandez, J. (2015)					X	X	X	All of them

Abellan Hernandez, J., & Hernandez, Martínez. (2016)	X				X	X	All of them
Healy, et al., (2017)				X	X	X	All of them
Ozer, D., & Aksoy, A. (2016)				X	X	X	All of them
Ostlund, D. (2015)		X			X	X	Cognitive
Rillotta, Raghavendra, & Thirumanickam, (2019)	X				X	X	Cognitive
Cherepov, et al. (2017)					X	X	All of them
Grenier & Miller, (2015)	X				X	X	All of them
Vonlintel et al., (2017)	X				X		All of them
Capio, Sit, Eguia, Abernethy, & Masters, (2015)				X	X		Motor

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The grouping of inclusive practices that are carried out within the physical education classroom and can be classified into 3 dimensions: emotional strategies (25 studies), organization of the physical education class space (14 studies) and pedagogical support within the classroom (16 studies) (see Table 2).

Table 2. Dimensions and categories inside the physical education classroom

<i>Dimension</i>	<i>Category</i>	<i>Authors</i>
Emotional Support in Physical Education Classes	Emotional climate in the classroom setting (gym, sports court, schoolyard)	Al Salim, Gorman, & Lirgg (2018); An & Meaney (2015); Bertills, Granlund, Dahlstrom, & Augustine (2018); Columna et al. (2016); Lieberman, Brian, & Grenier (2019); Majoko (2019); McKay, Block, & Park (2015); Petrie, Devcich, & Fitzgerald (2018); Qi & Wang (2018); Wang (2019); Wilhelmsen, Sorensen, & Seippel (2019); Rillotta, Raghavendra, & Thirumanickam (2019).
	Attitudes of the physical education teacher towards disability	Davis, Haegele, & Zhu (2017); Hodge, Haegele, Gutierrez Filho, & Lopes (2018); Lautenbach & Antoniewicz (2018); Wang, Qi, & Wang (2015); Abellan Hernandez, J., & Hernandez, A. (2016).
	Attitudes of the physical education classmates towards disability	Davis, Haegele, & Zhu (2017); Gobbi, Greguol, & Carraro (2018); Jin, Yun, & Agiovlasitis (2018); Lautenbach & Antoniewicz (2018); Reina, Hutzler, Iniguez-Santiago, & Moreno (2019); Ring, Kristen, & Klingvall-Arvidsson (2019); Wang, Wang, & Wen (2015); Grenier & Miller (2015).
Space organisation in physical education classes	Learning format in the gymnasium, schoolyard and/or sports court.	Anokwuru (2016); Davis, Haegele, & Zhu (2017); Hodge, Haegele, Gutierrez Filho, & Lopes (2018); McKay, Block, & Park (2015); Tanure Alves et al. (2017); Ostlund, D. (2015); Vonlintel et al. (2017).
	Time and behaviour management by the physical education teacher	Majoko (2019); Wang, Wang, & Wen (2015); Ostlund, D. (2015).
	Use of space and specific materials (gymnasium, sports court, schoolyard, balls)	Ackah-Jnr & Danso (2019); Overton, Wrench, & Garrett (2017); Wang (2019); Ostlund, D. (2015).
Pedagogical Support in Physical Education Classes	Adequacy of the curriculum and physical education activities	Anokwuru (2016); Bertills, Granlund, Dahlstrom, & Augustine (2018); Canales et al. (2018); Hodge, Haegele, Gutierrez Filho, & Lopes (2018); Kiuppis (2018); Laughlin, Murata, & McDougall (2019); Majoko (2019); McKay, Block, & Park (2015); Overton, Wrench, & Garrett (2017); Petrie, Devcich, & Fitzgerald (2018); Sit, Yu, Wong, Capio, & Masters (2019); Capio, Sit, Eguia, Abernethy, & Masters (2015).
	Professional assistance in the physical education class	Davis, Haegele, & Zhu (2017); Gobbi, Greguol, & Carraro (2018); A. J. Maher (2017); A. J. Maher (2016).

Subsequently, effective inclusion practices outside of the physical education classroom reported in the literature were categorised into aspects related to the strategies adopted by the educational institution and the public policies of each country (8 studies); practices that support or frame the effective inclusion of students with disabilities in physical education classes through government-derived programs (16 studies) (see Table 3).

*Table 3. Dimensions and categories outside the physical education classroom*

<i>Dimension</i>	<i>Category</i>		<i>Authors</i>
Educational Institution	Inclusive Project	Educational	Davis, Haegele, & Zhu (2017); J. A. Haegele, Hodge, Barbosa, & de Rezende (2018); Qi, Wang, & Ha (2017).
	Collaboration among teachers of different subjects		A. J. Maher (2016); Ring, Kristen, & Klingvall-Arvidsson (2019).
	Structural characteristics of the educational institution		Ackah-Jnr & Danso (2019); Davis, Haegele, & Zhu (2017); Qi, Wang, & Ha (2017); Wang (2019).
Public Policies	Inclusive National Policies for schools		Davis, Haegele, & Zhu (2017); Wang (2019).
	Professional training of physical education teachers		An & Meaney (2015); J. A. Haegele, Hodge, Barbosa, & de Rezende (2018); Lee (2016); A. Maher, Morley, Fimusanmi, & Ogilvie (2019); Majoko (2019); Qi, Wang, & Ha (2017); Taliaferro, Hammond, & Wyant (2015); Tanure Alves et al. (2017); Wang (2019); Yan & Deng (2019); Abellan Hernandez, J. (2015); Healy, et al. (2017); Ozer, D., & Aksoy, A. (2016); Cherepov, et al. (2017)

Source: own elaboration

## Discussion

The main findings in the literature on effective inclusion practices for students with disabilities in physical education are presented in Tables 2 and 3, respectively. On the one hand, the results linked to practices in the physical education classroom (see Table 2) identify strategies related to emotional support, the organisation of the gymnasium or classroom, and pedagogical strategies by the physical education teacher.

In addition, these dimensions are divided into categories that attempt to approach in more detail the inclusion practices for the physical education reported in the literature, as follows:

a) Emotional climate in the classroom setting (gym, sports court, schoolyard; b) attitudes of the physical education teacher towards disability; c) attitudes of the physical education classmates towards disability; d) learning format in the gymnasium, schoolyard and/or sports court; e) time and behavior management by the physical education teacher; f) use of space and specific materials (gymnasium, sports court, playground, balls); g) adequacy of the curriculum physical education activities; and, h) professional assistance in the physical education class.

On the other hand, authors also frame these inclusive practices at macro-systemic levels (see Table 3), which allude to the several educational policies or the programs of the educational establishment, which are supported by the contextual public policy. These dimensions are divided into categories that attempt to explain how the inclusion practices materialise in the classroom, namely: a) inclusive educational project; b) collaboration among teachers; c) structural characteristics of the Educational Institution; d) inclusive national policies for schools; and e) initial professional training of physical education teachers.

This section presents the results of the research in the categories belonging to the classroom level, as described above.

## **Emotional Support**

### ***Emotional climate in the classroom (gymnasium, sports court, schoolyard)***

The reviewed literature indicates that to achieve inclusion, a socioemotional connection among classroom educational actors is necessary (Al Salim et al., 2018; An & Maney, 2015). This is related to respect among participants, the enjoyment of the class, the levels of kindness and good treatment practised, and the low anxiety students show in class. The levels of anxiety that the students—with or without disabilities—present in the physical education class are an insufficiently researched topic. In this context, the reviewed research identifies this as a key point for the inclusion of students with disabilities due to the physical demands that are required to be deployed in the recreational activities that are characteristic of physical education classes (An & Meaney, 2015; Davis et al., 2017; Petrie et al., 2018). In the same way, the competitive and/or collaborative environment in different physical activities and exercises (whether individual or team-based) facilitates or interferes with the effective

inclusion of students with disabilities (Grenier & Miller, 2015). Some studies recommend creating collaborative environments that favour teamwork, empathy, democratic participation, and reciprocity in the different exercises, which must have a tone of cooperation and companionship, evaluating in a certain way these methods to perform games and collaborative exercises (Gobbi, Greguol, & Carraro, 2018).

#### ***Attitudes of the physical education teacher towards disability***

This category relates to the physical education teacher's ability to provide socio-emotional support to students with or without disabilities (Lieberman & Duarte, 2017). These attitudes are related to the capacity of the physical education teacher to engage and empathise with students (Hodge et al., 2018; Canales et al., 2018) and to the teacher's sensitivity to the diversity of the class. This behaviour is reflected in aspects ranging from the tone of voice used when addressing students with disabilities, to how they are appointed, to the exercises the physical education teacher tells them to perform (Qi et al., 2017; Tanure et al., 2017).

These attitudes are also related to individual factors (Wang et al., 2015) because they are linked to the experience that the physical education teacher has regarding the disability of the students and the knowledge levels that he or she has about them. Also, female physical education teachers exhibit a positive attitude, which leads to greater inclusion of students with disabilities (Wilhelmsen et al., 2019).

The research has determined that physical education teachers also present ambivalent or even contradictory attitudes in their practices. Firstly, they display inclusive speech, expressing concern about the actions to be carried out in their class; however, when implementing such strategies, they show a tendency towards disinterest or neglect in the learning of disabled students (Lautenbach & Antoniewics, 2018).

#### ***Attitudes of the physical education classmates towards disability***

This category relates to the ability of students in the classroom to empathise with those with disabilities, as well as the degree of involvement and emotional support peers can provide in physical education class. On the one hand, the study indicates that the attitudes of physical education teachers towards students with disabilities mirror those of their peers, becoming an influential factor in their behaviour (Hodge et al., 2018; Canales et al., 2018). On the other

hand, the findings reveal that non-disabled peers view physical education as an opportunity for inclusion and collaboration with their disabled classmates, especially in team and competitive sports (Grenier & Miller, 2015). Similarly, the research points out that such attitudes materialise in the physical education class, where non-disabled students demonstrate in practice their concern and empathy towards their peers with disabilities (Reina et al., 2019).

### **Classroom space and location organisation:**

#### ***Learning format in the gymnasium, schoolyard, and/or sports court***

This category is linked to how learning takes place within the physical education space, for instance, on the playing field, the school courtyard, and the gymnasium and/or multi-purpose court. In this aspect, the research suggests—in accordance with the area of attitudes—that inclusion is promoted by designing and implementing collaborative and interactive strategies, in which students are the main protagonists of learning, and collaboration is fostered as a whole to develop the activities (Anokwuru, 2016; Vonlintel et al., 2017). The design of these activities should have the underlying purpose of promoting inclusive peer attitudes towards students with disabilities, through teamwork and democratic participation. Likewise, the literature indicates that the physical education class should be oriented to the advancement of each student according to their initial capacities/abilities, instead of focusing on the maximum achievement of certain motor patterns or of certain sports effectiveness, to favor the improvement and efforts of each student over the maximum performance required according to his/her age and gender (Davis et al., 2017).

#### ***Time and behaviour management by the physical education teacher***

These practices are associated with the teacher's ability to distribute the exercise time among students and how he or she will reward or reinforce norms to students depending on their behaviour (Majoko, 2019). The time distribution in the physical education class is a fundamental aspect of lesson planning because the class is held in a different location from where students are normally located (Ostlund, 2015). The physical education teacher should consider the possibilities for autonomous mobility that disabled students have, as well as the time this displacement will entail (Wang et al., 2015). Also, behavior management is an

aspect that is emphasized in the research, due to the rewards or verbal stimuli that physical education teachers can provide, can encourage positive behaviors among students with disabilities (Majoko, 2019; Wang et al., 2015), but it is also advisable to guide them to their non-disabled peers so that they maintain inclusive attitudes and behaviors towards their classmates.

### ***Use of space and specific materials (gymnasium, sports court, schoolyard, balls)***

This category refers to strategies related to the physical space of the classroom and the specific materials for each activity or sport, which play an important role in the quality of inclusion practices and their achievement (Ackah-Jnr & Danso, 2019; Ostlund, 2015). The place where students move has to be architecturally or structurally accessible, that is, with access ramps, inclusive toilets, adequate lighting and acoustics, directional signs and exits, as well as rapid access to first aid (Overton et al., 2017). The specific materials for each sport or activity (balls, hoops, ropes, mats, rackets, cones, jumping trampolines, vaulting table, among others) are generally effective at inviting students to participate in class. Nonetheless, it is necessary to know which materials serve as inclusive elements, as these are accessible to all students; materials that are hard to handle or require high cognitive or physical skills could lead to the exclusion of students with disabilities (Ackah-Jnr & Danso, 2019).

### **Pedagogical Support:**

#### ***Adequacy of the curriculum and activities in physical education***

This is one of the most addressed categories by the reviewed research, as it focuses on specific physical education class strategies for inclusion. Some studies (Petrie et al., 2018; Canales et al., 2018) point out the restructuring of expected learning objectives at central levels, which requires accommodating certain activities to students' characteristics. By making learning objectives more flexible, it is possible to adapt pedagogical practices to students' characteristics, particularly when they present certain degrees of disability (Anokwuru, 2016). Likewise, it is possible to adapt exercises, games, sports, and several activities (for example, group or individual assignments that require work at home, the collaboration of students based on their characteristics in group work, among others). Similarly, to make these adjustments, physical education teachers must be familiar with

children's characteristics and their cognitive-motor development levels, so that objectives are established in line with their reality and the improvement process is evaluated against final performance (Capiro et al., 2015). It is relevant to mention that tension is identified in the findings since several authors acknowledge the need to adapt certain activities, but without modifying the entire curriculum, considering that, in order to achieve effective inclusion, no distinctions should be made among students by maintaining an equitable cross-cutting assessment for all students (Kiuppis, 2018).

### ***Professional assistance in the physical education class***

The collaboration of support professionals in the classroom is another element that promotes inclusion (Bertills et al., 2018). These professionals include special educators, speech therapists, and occupational therapists, among others, who can greatly contribute to the proper adaptation of activities for students with disabilities (Catellani et al., 2018). Those professionals can contribute their specific knowledge to adapt activities and exercises to the characteristics of the children, thereby contributing to their improvement process and to their adjustment to their possibilities (Maher, 2017; Davis et al., 2017). In contrast, it is necessary to consider that the presence of professionals exclusively for people with disabilities could encourage the segregation of these when, in practice, they are isolated from the physical education class by performing the activities in parallel to their classmates (Gobbi et al., 2018).

## **Educational Institution**

### ***Inclusive Educational Project***

Schools with inclusive institutional projects demonstrate the political stance of principals and territorial education authorities in providing inclusive education at all levels and across all subjects (Davis et al., 2017; Haegele et al., 2018). Although some studies mention the school's educational project as a fundamental axis of inclusion, most of the revised research does not contemplate the analysis of such a category, which is extremely important in actions related to the school infrastructure, curriculum adaptations, and the attitudes of the educational community towards disability (Qi et al., 2017; Ocete et al., 2015).

### ***Collaboration among teacher***

This category indicates the quantity and quality of interactions among teachers and with those in charge of the educational institution to work collaboratively across subjects, recognising the importance of the social context in which students, with or without disabilities, develop (Maher, 2016). Such collaboration is not evident in the revised research, neither among physical education teachers nor among teachers of other subjects, which could undermine opportunities for students with disabilities in physical education classes (Ring et al., 2019).

### ***Structural Characteristics of the School***

This category refers to the barriers and material obstacles within the school infrastructure that impede students' proper accessibility. Facilitators include appropriate infrastructure for wheelchairs and visual disabilities, inclusive toilets, sports equipment, elevators, and/or ramps, among others (Ackah-Inr & Danso, 2019). These structural characteristics facilitate or restrict the inclusion of students with disabilities, and it is necessary to identify the access routes and obstacles that the infrastructure may present in students' daily lives (Davis et al., 2017; Qi et al., 2017).

### **Public Policy**

#### ***Inclusive National Policies for Schools***

This category concerns educational programs and policies at the governmental level that, in some way, promote inclusive education and provide pedagogical guidelines for each school subject (Davis et al., 2017). Most of the research reviewed provides insufficient information on inclusive public policies or specific agencies that promote the inclusion of people with disabilities in regular classrooms, which are the fundamental driving force behind a country's educational decisions (Wang, 2019).

#### ***Professional training of physical education teachers***

Teacher training could be an element that endorses the inclusion of students (González & Macías, 2018; Hernández et al., 2017), by preparing professionals with theoretical and practical knowledge regarding diversity, specifically disability, and ways to encourage inclusion (Majoko, 2019; Abellán Hernández & Hernández Martínez, 2015). In this sense, it

the need is recognized to generate practical spaces within the initial training that can bring future physical education teachers closer to the diversity present in the classroom, so that, from their early training, they have access to the differences and characteristics of each student, and the possible obstacles and facilitators present in the educational establishment (Cherepov et al., 2017; Haegele et al., 2018).

## **Conclusion and future approaches**

From the analysis of the international literature, it is evident that there is a concentration of research focused on inclusive practices within the physical education class, highlighting the important role of the physical education teacher in the inclusion of students with disabilities (Fernández et al., 2019). Nevertheless, most of these results on effective practices are decontextualised, ignoring the fact that the strategies used by physical education teachers are embedded at meso- and macro-systemic levels, within the educational institution, educational establishment, or public policy, which facilitate or hinder the inclusion of all students.

Some studies emphasise the ambivalent attitudes of the physical education teacher towards inclusive discourse, as expressed versus what they do in practice. These attitudes are reflected in the teacher's daily behaviours, playing a fundamental role in modelling and moderating inclusive learning environments for all students.

There is scarce in-depth research with quantitative methodologies on the attitudes and beliefs of non-disabled peers, a relevant population for inclusion in the classroom. Similarly, there is little research related to the role of parents and/or caregivers of students with disabilities, their levels of involvement in the educational community, and the expected learning of disabled students. Additionally, the research overlooks the different types of disabilities that students may present; therefore, the reported practices do not respond to a medical specificity or a specific characteristic of students with disabilities.

In conclusion, the literature emphasises the importance of improving collaborative activities in physical education by modifying curricular activities to promote teamwork and cooperation rather than fostering competitive sports (Rello et al., 2018). Also, this review highlights that effective inclusion in school physical education is based on the articulation of categories both inside and outside the classroom, generating essential systemic coherence.

Similarly, the research reveals that the use of space and materials defines and facilitates the inclusion of students with disabilities, and the teacher's decisions are linked to the specific recognition of each disability and the knowledge acquired during the initial training (Fierro-Saldaña & Treviño-Villarreal, 2025). The active and committed role of teachers emerges as a fundamental pillar, whose pedagogical work is enhanced by aligning with school management that fosters inclusion and, in turn, is framed within a public policy that provides the support and resources necessary to consolidate truly equitable educational environments. This review presents certain limitations that should be considered when interpreting the findings. First, although relevant and high-impact databases such as PubMed, Scopus, and Web of Science were selected, some relevant studies may not have been included due to keyword or article restrictions or because they were not indexed in these databases. Second, the review focused on studies published between 2015 and 2023, potentially excluding earlier research that, although older, could offer valuable historical perspectives. Furthermore, excluding articles that did not present complete empirical results may have limited the inclusion of significant conceptual or theoretical research. Finally, although rigorous quality assessment and categorisation processes were carried out, the interpretation of the data may have been influenced by biases inherent in the selection and analysis process.

Future research should address the involvement levels of parents, guardians, family members, and/or caregivers of students with disabilities to provide a comprehensive view of the multifactorial context of students, as well as the particularities of each type of disability. This would shed light on more detailed methodologies and strategies focused on the personal and medical characteristics of students with disabilities in physical education classes. Similarly, it is important to investigate the attitudes of peer classmates, both with and without disabilities, to illuminate how the social group perceives disability. Additionally, it is necessary to further explore methodologies within the physical education classroom, considering Universal Design for Learning, the characteristics of the educational community, and collaboration among professionals and teachers. Furthermore, the results of this review provide a valuable theoretical guide for researchers interested in delving into specific aspects of inclusion in physical education. From a practical perspective, the identified methodological strategies can also be utilised by teachers and educational stakeholders to

develop inclusive pedagogical practices aligned with a holistic view of the human being (UNESCO, 2015).

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