e-Bangi Faculty of Social Sciences and Humanities Universiti Kebangsaan Malaysia
Journal of Social Sciences and Humanities

ISSN: 1823-884x
Volume 23, Issue 2, DOI: https://doi.org/10.17576/ebangi.2026.2302.06

Review Article

Barriers to Implementing Physical Fitness Programs for Students with Disabilities: A Systematic Review

Ranjanie A/P Karunamoorthy[1*], Khairul Farhah Khairuddin[1] and Nur Shakila Mazalan [2]

[1] Faculty of Education, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia
[2]Centre for Educational Studies & Community Well-being, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia

**Corresponding Author: ranjanie23@gmail.com*

Received: 06 November 2025 / Accepted: 18 May 2026

Abstract. Students with disabilities consistently demonstrate minimal participation in physical activity, despite well-established physical, cognitive, and emotional benefits. This systematic review examines the barriers to implementing physical fitness programmes for students with disabilities within educational surroundings. Guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, a total of 861 records were identified from Scopus and Web of Science. Eleven (11) studies met the inclusion criteria. Thematic synthesis identified three overarching themes: barriers to physical fitness programme implementation, the influence of physical, social, and institutional environments on participation, and effective strategies and interventions. The findings indicate that implementation is constrained by multiple factors such as inaccessible infrastructure, limited adapted resources, insufficient teacher training, and socioeconomic disadvantage. Contextual influences such as diagnostic categorisation, urban–rural disparities, and cultural perceptions were identified to affect the access to and effectiveness of physical fitness programmes. Nevertheless, several interventions demonstrated positive outcomes when implemented in encouraging environments. These include walking-based programmes, Daily Physical Activity toolkits, high-intensity interval training, and adaptive sports activities. Technology-supported approaches, such as supervision platforms and mobile tracking tools, were also reported to enhance motivation and individual engagement. Overall, the review highlights the need for equity-focused, multi-level strategies that align programme design with contextual realities and reduce systemic barriers. Collaboration among educators, families, and policymakers is essential to support the sustainable implementation of adaptive physical fitness programmes and to promote inclusive health outcomes for students with disabilities.

Keywords Barriers; implementations; physical fitness; students with disabilities; special educational needs

Introduction

Physical fitness is widely recognised as a fundamental component of overall health and well-being. It contributes significantly to physical, psychological, cognitive, and social development across the lifespan. Among children and adolescents, regular participation in physical activity has been associated with improved cardiovascular endurance, muscular strength, motor competence, cognitive functioning, and emotional resilience (Belcher et al., 2021; Husain et al., 2024; O'Brien et al., 2024). These benefits are particularly important for students with disabilities because this population frequently experiences higher rates of sedentary behaviour, secondary health complications, reduced functional independence, and lower overall quality of life compared to their non-disabled peers (Aitchison et al., 2022; Delgado-Gil et al., 2023; MacEachern et al., 2022).

Students with disabilities consistently demonstrate lower engagement in physical activity and structured fitness programmes across educational and community settings (Hickingbotham et al., 2021; Lai et

al., 2021; Monforte et al., 2021; Yu et al., 2022). Existing evidence suggests that these disparities are not solely attributable to individual functional boundaries but are also influenced by multiple interconnected barriers. The barriers are restricted access, participation, and sustained involvement in physical fitness opportunities. Therefore, understanding and addressing these barriers is essential for promoting just health outcomes and inclusive educational practices for students with disabilities.

Previous studies have identified that barriers to implementing physical fitness programmes for students with disabilities are multidimensional and operate across physical, social, and institutional domains. Physical barriers commonly involve inaccessible facilities, insufficient adapted equipment, and limited modifications to accommodate diverse functional abilities (Martin Ginis et al., 2021; Theis et al., 2021). Social barriers include stigma, exclusion, inadequate peer support, and negative perceptions toward disability, all of which may negatively influence participation experiences and motivation (Murphy & Carbone, 2008; Shields & Synnot, 2016). In addition, institutional barriers such as insufficient teacher training, limited financial resources, rigid curricular requirements, and inadequate policy support have been consistently identified as major constraints affecting effective programme implementation within school environments (Ginja & Chen, 2023; Haegele et al., 2021; Nikolajsen et al., 2021; Rekaa et al., 2019).

In response to these challenges, educational institutions and programme providers have increasingly introduced adaptive and inclusive physical fitness programmes. The programmes are designed to accommodate students with varied abilities and learning needs. Such initiatives frequently incorporate adapted instructional approaches, specialised equipment, activity modifications, and individualised support systems aimed at enhancing participation and accessibility (Lai et al., 2021). Nevertheless, existing research indicates that the implementation and sustainability of these programmes remain inconsistent across educational settings. Several studies continue to report challenges associated with inadequate funding, inadequate professional development opportunities, insufficient institutional readiness, and uncompromising curricular structures that hinder effective programme delivery (Alshoura, 2023; Bantham et al., 2021; Bondár et al., 2020; Shirazipour et al., 2020). These persistent limitations highlight the necessity for a broader and more integrated understanding of the factors influencing programme implementation beyond individual intervention outcomes alone.

The importance of inclusive physical fitness provision is further reinforced by global educational and public health agendas advocating equitable access to learning and health-promoting opportunities for all individuals. The United Nations Sustainable Development Goals, particularly Goal 3 (Good Health and Well-being) and Goal 4 (Quality Education), emphasise the need to safeguard inclusive and equitable access to quality education and health-related opportunities for all learners, including students with disabilities. Similarly, UNICEF's Inclusive Education Policy Framework advocates for the removal of participation barriers and the elevation of inclusive educational environments that support the full involvement of children with disabilities in all aspects of school life namely including physical education and recreational activities.

Studies have investigated specific barriers or evaluated particular interventions related to physical fitness participation among students with disabilities. However, the existing body of literature remains fragmented. Much of the available research focuses on isolated disability categories, individual intervention outcomes, or context-specific implementation factors. This results in limited integration across physical, social, and institutional dimensions which lead to a lack of consolidated evidence that systematically synthesises the broad range of barriers influencing the implementation of physical fitness programmes for students with disabilities from a comprehensive educational and policy-oriented perspective.

Therefore, this systematic review aims to examine the barriers associated with implementing physical fitness programmes for students with disabilities. Specifically, the review addresses three research questions:

i. What are the primary barriers to implementing physical fitness programmes for students with disabilities in educational settings?
ii. How do physical, social, and institutional factors influence the accessibility and effectiveness of these programmes?
iii. What strategies or interventions have been documented to overcome these barriers and improve participation in physical fitness programmes?

By fusing existing evidence, this review seeks to provide evidence-based guidance for educators, policymakers, and programme developers in strengthening inclusive physical fitness practices within educational settings.

Methodology

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines that ensure transparency, methodological rigour, and reproducibility. The review process was carried out over a defined period from January 2025 to April 2025. It encompasses literature identification, screening, eligibility assessment, and data synthesis. This study adopted a systematic review approach because it enables a structured, transparent, and reproducible synthesis of occurring empirical evidence (Azarian et al., 2023) related to barriers in implementing physical fitness programmes for students with disabilities. The systematic review design was considered appropriate for the study objectives as it facilitates the identification, evaluation, and integration of findings across multiple studies and educational contexts.

Figure 1 presents the PRISMA flow diagram outlining the study selection process. The diagram illustrates the stages involved in identifying, screening, assessing eligibility, and selecting studies included in the final synthesis. The PRISMA framework was used to ensure transparency and consistency throughout the review process.

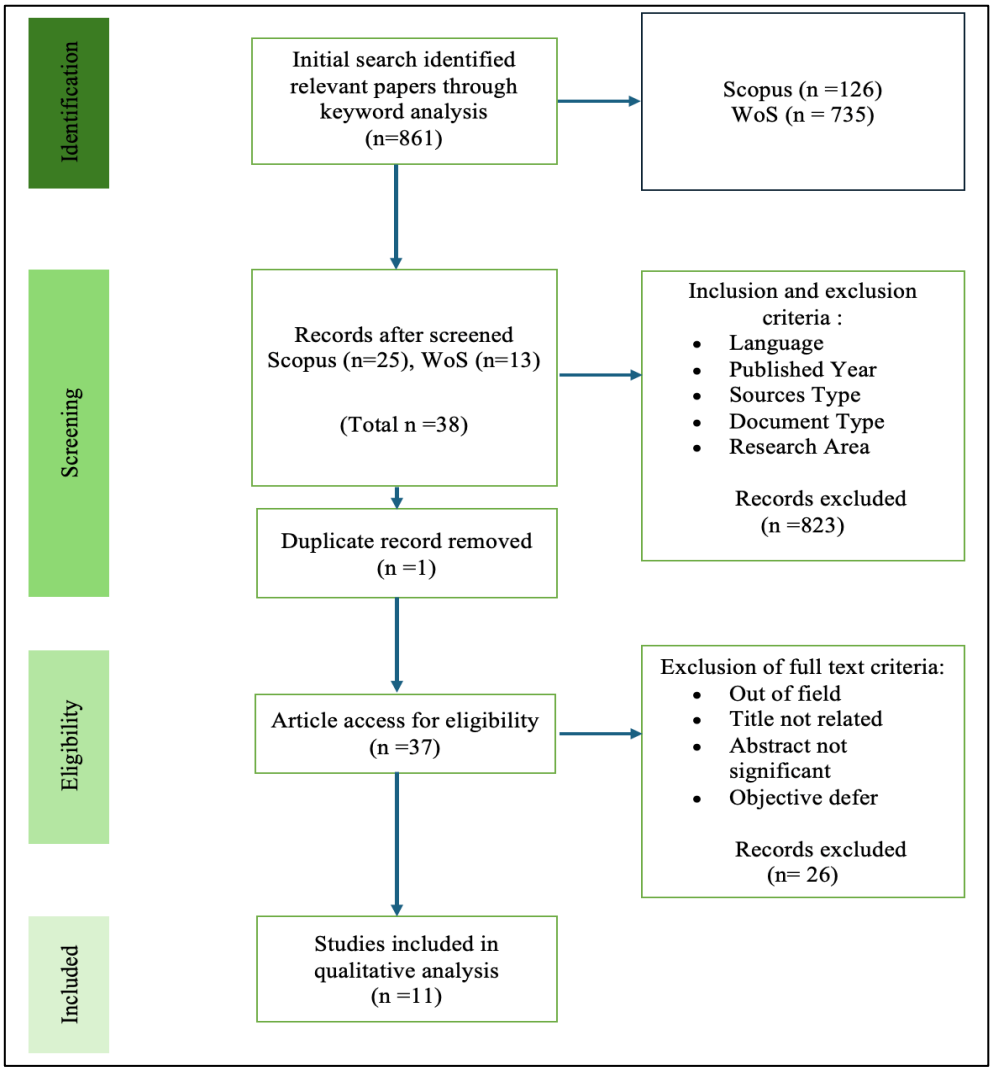

Figure 1. The PRISMA flow diagram outlining the study selection process

Search Strategy and Identification

To ensure thorough coverage of significant literature, searches were conducted using two major academic databases: Scopus and Web of Science (WOS). These databases were selected due to their extensive coverage of peer-reviewed research in health, education, and social sciences (Tran & Rudolf, 2022). An iterative search strategy was employed, whereby search terms were refined across multiple search attempts during the review period. This approach maximised the sensitivity and relevance of the search results.

Keywords related to physical fitness and disability, including physical fitness programs, students with disabilities, special educational needs, barriers, and implementation, were combined using Boolean operators and truncation techniques. The finalised search strings were adapted to fit the indexing systems of each database (Table 1). The cumulative search process yielded 861 records, which constituted the initial dataset for screening.

Table 1. The Search String

Scopus	TITLE-ABS-KEY ("barriers") AND ("physical fitness") AND ("students with disabilities" OR "students with special educational needs") AND (LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "HEAL")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (PUBSTAGE , "final")) Final search executed on: 25 March 2025
Wos	https://www.webofscience.com/wos/woscc/summary/2ff0bfa8-e22a-4519-a4ad-32b9774b6651-01254e1c6e/relevance/1 Final search executed on: 25 March 2025

Note: While the final search strings were executed and documented on 25 March 2025, the overall search process involved iterative refinement and verification conducted across the stated review period.

Screening And Eligibility Criteria

All retrieved records were subjected to a two-stage screening process. First, titles and abstracts were screened to eliminate duplicate, irrelevant, or non-eligible studies. This stage resulted in the exclusion of 823 records based on publication type, language, year, and topical relevance. Full-text screening was subsequently conducted on the remaining studies to assess eligibility against predefined inclusion and exclusion criteria (Table 2). The screening process involved title screening, abstract screening, and full-text review to ensure that all included studies met the predefined eligibility criteria.

Table 2. The Selection Criterion For Searching

Criterion	**Inclusion**	**Exclusion**
Language	English	Non English
Year of publication	2019 - 2025	< 2019
Sources type	Journals (only research articles)	Conference proceedings
Documents type	Articles	Book chapter, Letter, Review, Conference, Note
Study focus	Students with disabilities or special educational needs	Populations without disabilities or special educational needs
Study Content	Empirical findings related to the implementation of physical fitness or physical activity programmes	Studies not addressing implementation of physical fitness or physical activity programmes
Physical Fitness Limitation	Physical fitness limitations related to disability	Physical fitness limitations unrelated to disability (e.g., temporary injury)

Table 2 summarises the inclusion and exclusion criteria applied during the study selection process. Articles were included if they were peer-reviewed journal publications written in English and published

between 2019 and 2025. Eligible studies focused on students with disabilities or special educational needs and conveyed empirical findings related to the implementation of physical fitness or physical activity programmes. Studies were excluded if they involved populations without disabilities, addressed physical fitness limitations unrelated to disability (such as temporary injury), or did not examine implementation-related issues. In addition, non-research publications, including conference proceedings, book chapters, letters, and review articles, were excluded to ensure methodological dependability and empirical significance. Following full-text assessment based on these criteria, 26 studies were excluded, resulting in a final sample of 11 studies included for synthesis.

Data Abstraction and Synthesis

An integrative thematic approach was employed to analyse and synthesise evidence from the included studies. Data extraction concentrated on study characteristics, participant populations, programme contexts, and reported barriers to implementation. Information extracted from each study included author(s), publication year, country, participant characteristics, study design, programme context, variables examined, and key findings related to implementation barriers. Relevant findings were coded and ordered into thematic categories aligned with the review's research questions. Themes and patterns were identified through iterative comparison of recurring concepts, implementation challenges, and contextual factors reported crosswise the included studies.

To enhance analytical rigour, initial coding was conducted independently by two reviewers, followed by collaborative refinement of themes. Any disagreements during the coding and data extraction process were resolved through discussion and mutual arrangement between the reviewers. The thematic framework was reviewed iteratively to ensure conceptual coherence and relevance. Additionally, two external domain experts reviewed the final thematic structure to confirm content validity. This process strengthened the credibility and trustworthiness of the synthesis.

The Findings

This systematic review synthesised evidence from 11 peer-reviewed studies examining barriers, contextual influences, and effective strategies related to the implementation of physical fitness programmes for students with disabilities. The included studies varied in terms of geographical context, participant characteristics, and study design, but collectively addressed physical, social, institutional, and environmental dimensions influencing programme implementation.

Table 3 summarises the key characteristics of the included studies, including authorship, year of publication, population, study design, and primary focus relevant to this review.The findings are organised into three overarching themes: (1) barriers to physical fitness programme implementation, (2) the influence of physical, social, and institutional factors, and (3) effective strategies and interventions reported across studies.

Barriers to Physical Fitness Programme Implementation

Across the reviewed studies, multiple barriers were identified that deter the effective implementation of physical fitness programmes for students with disabilities. These barriers functioned at individual, programme, and systemic levels. Several studies highlighted attitudinal and psychological barriers, including negative perceptions toward physical activity, low perceived behavioural control, and reduced motivation among individuals with disabilities (Hillier et al., 2020). Such factors were linked with lower engagement in moderate to vigorous physical activity, especially among individuals with autism spectrum disorder.

Programme-level and operational barriers were also evident. Mullhall et al. (2024) reported high acceptability and participation in a walking-based intervention for children with intellectual disabilities; however, intervention implementation was challenged by logistical constraints, including disruptions related to the COVID-19 pandemic and technical difficulties in data collection. These findings denote that even well-designed programmes may be vulnerable to external and organisational limitations.

Table 3. Key Characteristics of the Included Studies

Author(s)	Year	Country / Context	Population	Study Design	Focus
Dalgaard et al.	2022	Multiple countries	Students with and without disabilities	Systematic review & meta-analysis	Effects of inclusive vs segregated educational settings and contextual factors influencing implementation
Hillier et al.	2020	Not specified	Adults with ASD	Cross-sectional survey	Barriers to physical activity participation, including attitudes and perceived behavioural control
Mullhall et al.	2024	Not specified	Children with intellectual disabilities	Intervention study	Feasibility and implementation barriers of a walking-based physical activity programme ('Walk Buds')
Luymes et al.	2023	Not specified	Families with children with disabilities	Survey-based study	Family-level and psychosocial barriers to physical activity participation
Peralta et al.	2019	Australia	Primary and secondary school students	Cross-sectional national study	Influence of socio-educational disadvantage (ICSEA) on physical activity and fitness outcomes
Rachmawati et al.	2022	Indonesia	Students with disabilities	Qualitative study (interviews & observations)	Institutional and instructional factors influencing participation during hybrid learning
Ip et al.	2022	Not specified	Children with ASD and subclinical ASD traits	Comparative study	Institutional funding disparities and access to educational support
Liu et al.	2023	Not specified	Parents of children with disabilities	Quantitative study	Impact of institutional context (urban–rural) on stress, resilience, and programme engagement
Forrest et al.	2023	United Kingdom (Greater London)	School-aged children	Spatial and ecological analysis	Environmental and institutional factors influencing walking-based physical activity
Bigelow et al.	2023	Not specified	Elementary school teachers and students	Programme evaluation study	Teacher capacity and fidelity in implementing Daily Physical Activity programmes
Garcia et al.	2019	Not specified	Middle school students	Cross-sectional study	Influence of family engagement, screen time, and ethnicity on physical activity levels

Luymes et al. (2023) identified financial constraints, reduced enjoyment, and negative psychosocial associations with physical activity among families raising children with disabilities. The absence of inclusive, adaptive, and accessible programmes was consistently reported as a key barrier at community and societal levels. Socioeconomic differences further added to these challenges. Peralta et al. (2019) demonstrated that students in lower socio-educational advantage contexts experienced lower levels of physical activity

knowledge, movement skills, and cardiorespiratory fitness compared to peers in more advantaged school settings. This intensifies the need for a stable supply of resources for the continuity in implementation success.

Table 4 presents physical activity and fitness outcomes reported in Peralta et al. (2019), stratified by school socio-educational advantage (ICSEA levels).

Table 4. Student Outcomes Related to Physical Activity and ICSEA by School Level, Australia, 2015

Students' Physical Activity Outcomes	**Primary: ICSEA < 1000 (%)**	**Primary: ICSEA ≥ 1000 (%)**	**Primary: AOR (95% CI)**	**Primary: p Value**	**Secondary: ICSEA < 1000 (%)**	**Secondary: ICSEA ≥ 1000 (%)**	**Secondary: AOR (95% CI)**	**Secondary: p Value**
Mean number of MVPA days	3.8	4.2	—	.002	3.5	3.7	—	.143
Meet daily PA recommendation (%)	21.8	23.4	1.12 (0.90, 1.38)	< .05	11.7	11.4	1.10 (0.67, 1.82)	—
Know PA recommendation (%)	19.5	29.2	1.61 (1.29, 2.01)	< .01	26.7	29.4	1.19 (0.74, 1.92)	—
2 of 3 object control skills (%)	35.5	40.4	1.30 (0.86, 1.95)	—	63.6	59.6	0.94 (0.66, 1.34)	—
3 of 4 locomotor skills (%)	35.2	42.8	1.35 (0.97, 1.86)	—	59.3	63.3	1.34 (0.90, 1.98)	—
Healthy fitness zone for SBJ (%)	31.7	38.7	1.36 (0.91, 2.03)	—	32.9	36.7	1.06 (0.74, 1.51)	—
Healthy fitness zone for CRE (%)	51.6	66.8	1.71 (1.14, 2.56)	< .05	52.3	62.7	1.87 (1.24, 2.84)	< .05

CI = Confidence Interval; ICSEA = Index of Community Socio-Educational Advantage; MVPA = Moderate-to-Vigorous Physical Activity; PA = Physical Activity; SBJ = Standing Broad Jump; CRE = Cardiorespiratory Endurance. Bolded AOR values indicate statistical significance. Data adjusted for student's sex, age, language background (English-speaking, non-English-speaking), and residence (urban, rural). † Students in Years 2, 4, 6, 8, and 10. ‡ Students in Years 4, 6, 8, and 10.

The data are derived from a single included study and are presented to illustrate how environmental disadvantage may intensify barriers to physical fitness participation. These findings highlight the intersection between socioeconomic context and disability-related challenges in programme implementation.

Influence of Physical, Social, and Institutional Factors

Beyond direct barriers, the reviewed studies highlighted how physical, social, and institutional conditions influence the implementation and outcomes of physical fitness programmes. Dalgaard et al. (2022) reported mixed and non-significant effects of inclusive versus segregated educational settings, suggesting that contextual variables such as staff expertise, infrastructure, and classroom composition play a critical role in determining programme effectiveness.

Institutional factors related to funding and policy frameworks were also identified. Ip et al. (2022) found that children with subclinical autism traits received significantly less educational funding despite displaying functional profiles similar to those with formal diagnoses, highlighting how institutional definitions and eligibility criteria influence access to support services. Liu et al. (2023) further demonstrated that residential context moderated parental stress and resilience, with families in rural areas experiencing greater challenges due to limited institutional resources.

Environmental conditions also influenced opportunities for physical activity participation. Forrest et al. (2023) identified disparities in pedestrian safety across urban areas, with higher accident risks observed in

socially deprived neighbourhoods. These findings indicate that physical infrastructure and environmental safety are important factors of walking-based physical activity, particularly for children and adolescents.

Effective Strategies and Interventions

In contrast, several studies reported strategies and interventions that showed promise in supporting physical fitness participation among students with disabilities. Dalgaard et al. (2022) noted that inclusive education approaches were more effective when accompanied by specific supports, such as co-teaching models, differentiated instruction, and structured social-emotional learning components.

At the programme level, Mullhall et al. (2024) identified consistent scheduling, teacher engagement, and delivery flexibility as key facilitators of successful implementation in a walking-based intervention. Bigelow et al. (2023) similarly reported that the provision of accessible resources and minimal teacher training improved confidence and fidelity in implementing Daily Physical Activity programmes, particularly in early primary settings.

Family and community-based components were also correlated with improved outcomes. Garcia et al. (2019) found that family engagement, reduced screen time, and healthy behavioural routines were linked to higher physical activity levels among middle school students. Figure 2 illustrates the interaction effect between ethnicity and screen time on physical activity levels as reported in Garcia et al. (2019).

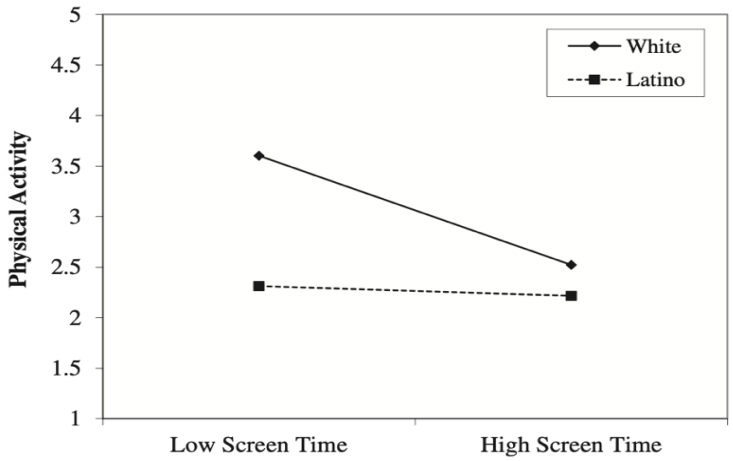

Figure 2. The Interaction Effect Between Ethnicity and Screen Time on Physical Activity

The figure is derived from a single included study and demonstrates how behavioural and contextual factors transect to influence physical activity engagement. At a broader systems level, studies highlighted the importance of inclusive programme design, financial accessibility, and supportive environments in promoting sustained participation (Luymes et al., 2023). Environmental strategies, such as improving green spaces and pedestrian safety, were also identified as enabling factors for walking-based physical activity in disadvantaged communities (Forrest et al., 2023).

Overall, the findings indicate that the implementation of physical fitness programmes for students with disabilities is influenced by a complex interaction of individual, social, institutional, and environmental factors. While barriers related to accessibility, resources, and contextual constraints remain dominant, the reviewed evidence demonstrates that targeted, inclusive, and context-responsive strategies can assist meaningful engagement in physical activity. These findings deliver a foundation for understanding implementation challenges and advise subsequent discussion on implications for policy, practice, and future research.

Discussion

This systematic review highlights that the implementation of physical fitness programmes for students with disabilities is shaped by a complex interaction of individual, social, institutional, and environmental factors. Based on the studies analysed, barriers to implementation were not limited to physical access or programme availability but were closely linked to psychosocial dynamics, institutional readiness, and broader socioeconomic conditions. These findings support with earlier evidence demonstrating that participation in physical activity among individuals with disabilities is strongly influenced by perceived competence, motivation, and contextual support (Hillier et al., 2020; Luymes et al., 2023).

Several studies reviewed emphasised that inclusion alone does not guarantee positive physical fitness outcomes. Dalgaard et al. (2022) reported small and statistically non-significant effects of inclusive educational settings when inclusive practices were not accompanied by targeted instructional and structural supports. This suggests that the effectiveness of inclusive physical fitness programmes relies on how inclusion is operationalised, rather than on placement of the programmes alone. Similarly, Mullhall et al. (2024) demonstrated that although walking-based interventions were well accepted by students with intellectual disabilities, implementation fidelity was vulnerable to logistical constraints and contextual disruptions, including those associated with the COVID-19 pandemic.

Socioeconomic and institutional inequalities appeared as persistent factors influencing programme performance. Findings from Peralta et al. (2019) illustrated that students in lower socio-educational advantage backgrounds experienced poorer physical activity knowledge and fitness outcomes, highlighting how environmental disadvantage can add to disability-related barriers. Institutional definitions and funding structures further influenced access to support, as demonstrated by Ip et al. (2022), who found that children with subclinical autism traits received fewer educational resources despite comparable functional needs. These findings reinforce the role of policy and institutional frameworks in shaping equitable access to physical fitness opportunities.

The influence of family and community contexts was also apparent. Luymes et al. (2023) reported that families raising children with disabilities often associated physical activity with financial burden and negative psychosocial experiences, which diminished participation. Similarly, Liu et al. (2023) showed that parental stress and resilience were moderated by residential context, with families in rural areas experiencing greater challenges due to limited institutional support. Together, these findings propose that sustainable physical fitness participation requires engagement beyond the school setting and consideration of family-level constraints.

In response to these challenges, the reviewed evidence highlights several strategies that may reinforce more effective implementation. Programmes that incorporated structured scheduling, teacher engagement, and delivery flexibility demonstrated higher feasibility and acceptance (Mullhall et al., 2024; Bigelow et al., 2023). Inclusive approaches were more effective when supported by differentiated instruction, co-teaching models, and social-emotional learning components (Dalgaard et al., 2022). Environmental and infrastructural strategies, such as improving pedestrian safety and access to green spaces, were also identified as enabling factors for walking-based physical activity, particularly in disadvantaged communities (Forrest et al., 2023).

From an implementation perspective, these findings suggest several practical implications. Educators require specialised training and accessible resources to apply adaptive and inclusive physical fitness programmes effectively. Schools must prioritise the development of accessible environments and ensure that programme design accounts for diverse physical, sensory, and cognitive needs. At the policy level, equitable resource allocation is essential, particularly for schools and families in lower socioeconomic contexts. Institutional criteria for funding and support should reflect functional needs rather than diagnostic labels alone, as highlighted by Ip et al. (2022).

Family engagement also plays a critical role in sustaining physical activity participation. Supporting caregivers through stress-management initiatives and providing guidance for promoting physical activity at home may enhance programme continuity and effectiveness (Liu et al., 2023; Garcia et al., 2019).

Additionally, the integration of technology-based tools and structured resources may support motivation, monitoring, and engagement when aligned with programme objectives (Bigelow et al., 2023).

Conclusion

This systematic review demonstrates that the implementation of physical fitness programmes for students with disabilities is affected by individual, social, institutional, and environmental factors. Barriers related to accessibility, socioeconomic disadvantage, institutional support, and psychosocial dynamics continue to restrain meaningful participation, even within inclusive educational settings. The evidence reviewed signals that inclusion alone is insufficient; effective implementation requires targeted, adaptive, and context-responsive strategies that address the diverse needs of students with disabilities.

By synthesising findings across international studies, this review highlights the importance of structured programme design, educator capacity, family engagement, and equitable resource allocation in supporting physical fitness participation. While several promising strategies have been identified, gaps remain in understanding how these interventions can be sustained across diverse contexts. Future research should put above longitudinal and context-sensitive studies to examine the long-term effectiveness of inclusive physical fitness programmes and to identify mechanisms that support equitable participation. Strengthening collaboration among schools, families, and policymakers will be essential to advancing inclusive physical fitness practices and improving health outcomes for students with disabilities.

Acknowledgement: The authors gratefully acknowledge Universiti Kebangsaan Malaysia, Faculty of Education, for the financial support provided under Grant GG-2024-051 for the publication of this article.

Conflicts of Interest: The authors declare no conflict of interest.

References

Aitchison, B., Rushton, A. B., Martin, P., Barr, M., Soundy, A., & Heneghan, N. R. (2022). The experiences and perceived health benefits of individuals with a disability participating in sport: A systematic review and narrative synthesis. *Disability and Health Journal, 15*(1), 101164. https://doi.org/10.1016/j.dhjo.2021.101164

Alshoura, H. (2023). Critical review of special needs education provision in Malaysia: Discussing significant issues and challenges faced. *International Journal of Disability, Development and Education, 70*(5), 869–884. https://doi.org/10.1080/1034912X.2021.1913718

Azarian, M., Yu, H., Shiferaw, A. T., & Stevik, T. K. (2023). Do we perform systematic literature reviews right? A scientific mapping and methodological assessment. *Logistics, 7*(4), 89. https://doi.org/10.3390/logistics7040089

Bantham, A., Taverno Ross, S. E., Sebastião, E., & Hall, G. (2021). Overcoming barriers to physical activity in underserved populations. *Progress in Cardiovascular Diseases, 64*, 64–71. https://doi.org/10.1016/j.pcad.2020.11.002

Belcher, B. R., Zink, J., Azad, A., Campbell, C. E., Chakravartti, S. P., & Herting, M. M. (2021). The roles of physical activity, exercise, and fitness in promoting resilience during adolescence: Effects on mental well-being and brain development. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging, 6*(2), 225–237. https://doi.org/10.1016/j.bpsc.2020.08.005

Bigelow, H., Singh, S., & Fenesi, B. (2023). Reducing key barriers to classroom physical activity improves implementation fidelity in Ontario elementary classrooms. *Education Sciences, 13*(10), 1060. https://doi.org/10.3390/educsci13101060

Bondár, R. Z., di Fronso, S., Bortoli, L., Robazza, C., Metsios, G. S., & Bertollo, M. (2020). The effects of physical activity or sport-based interventions on psychological factors in adults with intellectual

disabilities: A systematic review. *Journal of Intellectual Disability Research, 64*(2), 69–92. https://doi.org/10.1111/jir.12699

Dalgaard, N. T., Bondebjerg, A., Viinholt, B. C. A., & Filges, T. (2022). The effects of inclusion on academic achievement, socioemotional development and wellbeing of children with special educational needs. *Campbell Systematic Reviews, 18*(4), e1291. https://doi.org/10.1002/cl2.1291

Delgado-Gil, S., Mendoza-Muñoz, D. M., Galán-Arroyo, C., Denche-Zamorano, Á., Adsuar, J. C., Mañanas-Iglesias, C., Castillo-Paredes, A., & Rojo-Ramos, J. (2023). Attitudes of non-disabled pupils towards disabled pupils to promote inclusion in the physical education classroom. *Children, 10*(6), 1008. https://doi.org/10.3390/children10061008

Forrest, M., Heydari, S., & Cherrett, T. (2023). Examining the impact of exposure, built environment, and sociodemographics on pedestrian safety: A case study of Greater London. *Safety Science, 157*, 106015. https://doi.org/10.1016/j.ssci.2022.106015

Garcia, A. S., Takahashi, S., Anderson-Knott, M., & Dev, D. (2019). Determinants of physical activity for Latino and White middle school–aged children. *Journal of School Health, 89*(1), 3–10. https://doi.org/10.1111/josh.12706

Ginja, T. G., & Chen, X. (2023). Conceptualising inclusive education: The role of teacher training and teachers' attitudes towards inclusion of children with disabilities in Ethiopia. *International Journal of Inclusive Education, 27*(9), 1042–1055. https://doi.org/10.1080/13603116.2021.1879958

Haegele, J. A., Wilson, W. J., Zhu, X., Bueche, J. J., Brady, E., & Li, C. (2021). Barriers and facilitators to inclusion in integrated physical education: Adapted physical educators' perspectives. *European Physical Education Review, 27*(2), 297–311. https://doi.org/10.1177/1356336X20944429

Hickingbotham, M. R., Wong, C. J., & Bowling, A. B. (2021). Barriers and facilitators to physical education, sport, and physical activity program participation among children and adolescents with psychiatric disorders: A systematic review. *Translational Behavioral Medicine, 11*(9), 1739–1750. https://doi.org/10.1093/tbm/ibab085

Hillier, A., Buckingham, A., & Schena, D. (2020). Physical activity among adults with autism: Participation, attitudes, and barriers. *Perceptual and Motor Skills, 127*(5), 874–891. https://doi.org/10.1177/0031512520927560

Husain, H., Samsudin, S., Ayub, A. F. M., Ahmad, M. F., & Afwan, N. S. Z. S. (2024). A systematic literature review on the impact of participation in sport and physical activities on psychological resilience. *International Journal of Public Health Science, 13*(4), 1727–1739. https://doi.org/10.11591/ijphs.v13i4.24345

Ip, A., Poon, B. T., Hanley, G., Guhn, M., & Oberlander, T. F. (2022). Developmental profiles of children at risk for autism spectrum disorder at school entry. *Autism Research, 15*(7), 1301–1310. https://doi.org/10.1002/aur.2742

Lai, B., Lee, E., Kim, Y., Matthews, C., Swanson-Kimani, E., Davis, D., Vogtle, L., & Rimmer, J. H. (2021). Leisure-time physical activity interventions for children and adults with cerebral palsy: A scoping review. *Developmental Medicine & Child Neurology, 63*(2), 162–171. https://doi.org/10.1111/dmcn.14751

Liu, S. Y., Zhang, L., Yi, J. T., Liu, S. G., Li, D., Wu, D. H., & Yin, H. Z. (2023). The relationship between parenting stress and parental burnout among Chinese parents of children with ASD: A moderated mediation model. *Journal of Autism and Developmental Disorders, 53*(8), 3171–3184. https://doi.org/10.1007/s10803-022-05854-y

Luymes, N., Fletcher, P., & Bryden, P. (2023). Evaluating the needs of families raising children with and without disabilities: Focus on physical activity. *International Journal of Disability, Development and Education, 70*(3), 463–478. https://doi.org/10.1080/1034912X.2021.1931816

MacEachern, S., Forkert, N. D., Lemay, J. F., & Dewey, D. (2022). Physical activity participation and barriers for children and adolescents with disabilities. *International Journal of Disability, Development and Education, 69*(1), 204–216. https://doi.org/10.1080/1034912X.2021.1952939

Martin Ginis, K. A., van der Ploeg, H. P., Foster, C., Lai, B., McBride, C. B., Ng, K., Pratt, M., Shirazipour, C. H., Smith, B., Vásquez, P. M., & Heath, G. W. (2021). Participation of people living with disabilities in physical activity: A global perspective. *The Lancet, 398*(10298), 443–455. https://doi.org/10.1016/S0140-6736(21)01164-8

Monforte, J., Úbeda-Colomer, J., Pans, M., Pérez-Samaniego, V., & Devís-Devís, J. (2021). Environmental barriers and facilitators to physical activity among university students with physical disability: A qualitative study in Spain. *International Journal of Environmental Research and Public Health, 18*(2), Article 464. https://doi.org/10.3390/ijerph18020464

Mullhall, P., Taggart, L., McDermott, G., Slater, P., Fitzpatrick, B., Murphy, M. H., Hassiotis, A., & Johnston, A. (2024). Walk Buds: A walking intervention to increase physical activity, physical fitness, and emotional wellbeing in 9–13-year-old children with intellectual disabilities: Results of a clustered randomised feasibility trial. *Journal of Applied Research in Intellectual Disabilities*. Advance online publication. https://doi.org/10.1111/jar.13260

Murphy, N. A., & Carbone, P. S. (2008). Promoting the participation of children with disabilities in sports, recreation, and physical activities. *Pediatrics, 121*(5), 1057–1061. https://doi.org/10.1542/peds.2008-0566

Nikolajsen, H., Sandal, L. F., Juhl, C. B., Troelsen, J., & Juul-Kristensen, B. (2021). Barriers to, and facilitators of, exercising in fitness centres among adults with and without physical disabilities: A scoping review. *International Journal of Environmental Research and Public Health, 18*(14), Article 7341. https://doi.org/10.3390/ijerph18147341

O'Brien, W., Belton, S., Fitzpatrick, B., Shannon, S., Brennan, D., Chambers, F., O'Donovan, K., & Breslin, G. (2024). Relationship between gender, physical activity, screen time, body mass index and wellbeing in Irish children from social disadvantage. *Child Care in Practice, 30*(3), 220–234. https://doi.org/10.1080/13575279.2021.1887815

Peralta, L. R., Mihrshahi, S., Bellew, B., Reece, L. J., & Hardy, L. L. (2019). Influence of school-level socioeconomic status on children's physical activity, fitness, and fundamental movement skill levels. *Journal of School Health, 89*(6), 460–467. https://doi.org/10.1111/josh.12761

Rachmawati, N., Supena, A., Yufiarti, Y., Yarmi, G., & Casmana, A. R. (2022). Analysis of hybrid learning for students with learning disabilities in primary schools providing inclusive education. *Qualitative Report, 27*(10), 2185–2201. https://doi.org/10.46743/2160-3715/2022.5432

Rekaa, H., Hanisch, H., & Ytterhus, B. (2019). Inclusion in physical education: Teacher attitudes and student experiences. A systematic review. *International Journal of Disability, Development and Education, 66*(1), 36–55. https://doi.org/10.1080/1034912X.2018.1435852

Shields, N., & Synnot, A. (2016). Perceived barriers and facilitators to participation in physical activity for children with disability: A qualitative study. *BMC Pediatrics, 16*(1), Article 9. https://doi.org/10.1186/s12887-016-0544-7

Shirazipour, C. H., Evans, M. B., Leo, J., Lithopoulos, A., Martin Ginis, K. A., & Latimer-Cheung, A. E. (2020). Program conditions that foster quality physical activity participation experiences for people with a physical disability: A systematic review. *Disability and Rehabilitation, 42*(2), 147–155. https://doi.org/10.1080/09638288.2018.1494215

Theis, N., Campbell, N., De Leeuw, J., Owen, M., & Schenke, K. C. (2021). The effects of COVID-19 restrictions on physical activity and mental health of children and young adults with physical and/or intellectual disabilities. *Disability and Health Journal, 14*(3), Article 101064. https://doi.org/10.1016/j.dhjo.2021.101064

Tran, N. L., & Rudolf, W. (2022). Social media and destination branding in tourism: A Systematic Review of the Literature. Sustainability, 14(20), 13528. https://doi.org/10.3390/su142013528

Yu, S., Wang, T., Zhong, T., Qian, Y., & Qi, J. (2022). Barriers and facilitators of physical activity participation among children and adolescents with intellectual disabilities: A scoping review. *Healthcare, 10*(2), Article 233. https://doi.org/10.3390/healthcare10020233