Physical Education Theory and Methodology
Теорія та методика фізичного виховання

ISSN 1993-7989 (print)
ISSN 1993-7997 (online)
ISSN-L 1993-7989

Review Article

Towards Inclusive Physical Activity: A Systematic Review of Scopus Evidence on Multidimensional Barriers in Physical and Intellectual Disabilities

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Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

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Accepted for Publication: July 2, 2025
Published: July 30, 2025

DOI: 10.17309/tmfv.2025.4.28

Abstract

Objectives. The study aimed to systematically analyze barriers to physical activity (PA) among individuals with physical and intellectual disabilities, integrating the COM-B model and Social Determinants of Health (SDH) framework to identify universal and disability-specific challenges.

Materials and methods. The present research involved a PRISMA-guided systematic review of 14 Scopus-indexed studies published between 2021 and 2025 from high- (HICs) and low-middle-income countries (LMICs). Thematic synthesis categorized barriers into environmental/structural, intrapersonal, and sociocultural domains.

Results. The results revealed environmental/structural barriers as predominant (10 studies), including transportation limitations (29% in Norway), inaccessible facilities (91% inactivity in Canadian children), and institutional resource gaps. Intrapersonal barriers (4 studies) included motivation deficits and gender stigma (8 unique barriers for women with physical disabilities). Distinct challenges were identified: individuals with physical disabilities faced fatigue (β = -0.34, $p < 0.001$) and chronic pain, while individuals with intellectual disabilities encountered caregiver dependency and cognitive limitations. Geographic disparities highlighted infrastructural barriers in HICs (e.g., Belgium's adaptive program gaps) versus motivational/resource challenges in LMICs (e.g., 0% PA compliance among Turkish mothers).

Conclusions. The findings of this study underscore the need for tailored, multi-level interventions addressing disability-specific barriers and systemic inequities. Policy priorities include infrastructure investment, caregiver training, and stigma reduction to align with SDGs 3 (Health) and 10 (Reduced Inequalities). Cross-sector collaboration and context-driven strategies are critical to operationalize inclusive PA frameworks globally.

Keywords: physical activity, disability and health equity, environmental accessibility, COM-B model, inclusive policy, sustainable development goals (SDGs).

Introduction

Lack of physical activity is a fundamental problem faced by people with disabilities worldwide. Based on data from the World Health Organization (WHO, 2011, 2022) and the Health and Disability Data System (DHDS, 2020), it is estimated that 30–58% of this population does not meet the minimum physical activity (PA) recommendations, with inactivity rates exceeding the general population by 1.5–3 times. This gap stems not only from individual health conditions but is also influenced by systemic inequities such as inaccessible environments, social stigma, and inconsistent policy implementation (Naud et al., 2019; Southby et al., 2019). These challenges directly hinder progress towards

the United Nations Sustainable Development Goals (SDGs) for equitable health outcomes and inclusive societies (UN, 2015), which requires urgent cross-sectoral collaboration.

Previous research has mapped the various barriers to physical activity among specific disability groups. In people with physical disabilities, the main structural barriers are inadequate infrastructure and limited transportation (M. Bloemen et al., 2017; M. A. T. Bloemen et al., 2015). In contrast, in individuals with intellectual disabilities, the most common problems are dependency on caregivers and social marginalization (Bondár et al., 2020; Dairo et al., Sutherland et al., 2021).Recent scholarship increasingly documents gendered dimensions of exclusion, demonstrating that women with disabilities confront intersecting obstacles such as discrimination and gender-insufficient program designs (Olasagasti-Ibargoien et al., 2023; Tuncay & Sarman, 2023). Theoretical models, including the COM-B framework (capability, opportunity, motivation-behavior) and Social Determinants of Health (SDH), have enhanced insights into the interplay between individual capacities, environmental contexts, and systemic inequities in restricting PA engagement (Ashadi, 2024; McDermott et al., 2022). Nevertheless, significant knowledge voids remain unresolved.

First, comparative analyses of barriers across disability types remain scarce, obscuring shared and distinct challenges. For instance, while environmental inaccessibility similarly affects individuals with physical and intellectual disabilities (Devarajan et al., 2020; Farrell, & Giles, 2022), their interaction with disability-specific factors—such as chronic pain in physical disabilities versus cognitive dependency in intellectual disabilities—is underexplored. Second, studies predominantly originate from high-income countries (HICs; e.g., Canada, Norway), neglecting low- and middle-income countries (LMICs) where 80% of the global disability population resides (WHO, 2024). This geographic imbalance limits insights into how socioeconomic and cultural contexts shape PA participation, particularly in resource-limited settings. Third, existing interventions often prioritize isolated dimensions (e.g., structural or behavioral), lacking integrative frameworks that address intersections of disability type, gender, and sociocultural norms (Shea et al., 2022).

This study addresses these gaps by systematically analyzing PA barriers across physical and intellectual disabilities through a multidimensional lens. Integrating the COM-B model and SDH framework, we propose a typology of universal and disability-specific barriers, informed by 14 global studies (2021–2025) spanning HIC and LMIC contexts. Our analysis advances three contributions: (1) a cross-disability classification of barriers, identifying environmental/structural (e.g., transportation gaps), intrapersonal (e.g., motivation), and sociocultural (e.g., gender stigma) determinants; (2) evidence-based policy recommendations targeting micro- (caregiver training), meso- (community programs), and macro-level (infrastructure funding) reforms; and (3) a foundation for operationalizing the UN Convention on the Rights of Persons with Disabilities through cross-sector collaboration. By bridging theoretical and practical divides, this review informs equitable PA promotion strategies aligned with SDGs 3 (Health) and 10 (Reduced Inequalities).

Materials and Methods

Study Design

This systematic review was designed to identify thematic syntheses and publication trends related to physical activity barriers among individuals with physical and intellectual disabilities. The analysis followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Moher et al., 2009). The Scopus database was selected as the primary source due to its credible indexing and lower risk of duplication or predatory articles compared to Google Scholar (Lasda Bergman, 2012; Mendes Rocha et al., 2023).

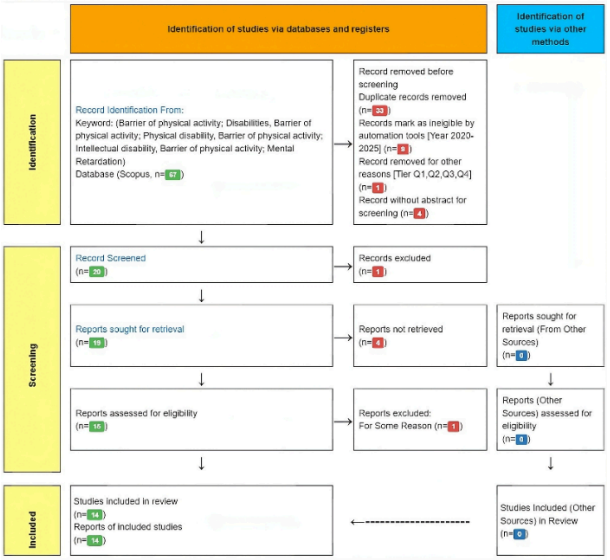

Fig 1. Flowchart diagram illustrating the study selection procedure following PRISMA guidelines

Eligibility Criteria

The study selection process applied the following eligibility criteria: (1) empirical investigations published in Scopus-indexed journals (all quartiles, Q1-Q4) from 2020 to 2025; (2) English-language articles with full open access; and (3) studies that explicitly examine barriers to physical activity in individuals with physical or intellectual disabilities. Exclusion criteria were carried out by eliminating studies with limited text accessibility, publications behind a paywall or restricted access, and papers that did not focus on barriers to physical activity.

Procedure

The analysis adhered to the four-stage PRISMA framework. The identification phase began with a search in the Scopus database using the keywords "Barrier of physical activity", "Physical disability", "Intellectual disability", and "Mental Retardation", yielding 67 initial articles. During the screening phase, 33 articles were removed due to duplication, 14 articles were excluded for not meeting inclusion criteria (open access and disability focus), 9 articles fell outside the 2020–2025 publication range, 1 article did

not meet journal tier criteria (Q1–Q4), and 4 articles lacked abstracts, resulting in 20 eligible articles. In the evaluation phase, 1 irrelevant article, 4 articles with unavailable full texts, and 1 article with methodological bias were excluded, leaving 14 final studies for in-depth analysis. During the data analysis phase, a thematic synthesis integrating qualitative and quantitative findings was conducted to identify primary physical activity barriers—interpersonal, intrapersonal, and environmental/structural—while also examining differences between physical and intellectual disabilities.

Result

Profile of Physical Activity Barriers

Research on barriers to physical activity (PA) among individuals with physical and intellectual disabilities has predominantly been conducted in Europe, the Americas, Asia, and Australia. Methodologies such as systematic reviews, cross-sectional studies, surveys, and cohort analyses were most frequently employed, with a balanced composition of quantitative and qualitative data. Target demographics

Table 1. Disability research synthesis: methods, populations, barriers, and outcomes

No	Authors	Country	Research Methods	Target Population	Disability Type	Dominant Barriers	Result
1	Liu et al., 2025	China	Systematic review	Adolescents	Multiple disability	Environmental/ Structural Barriers	The thematic synthesis revealed 19 themes, including a unique "Special factor" and three interaction phases among school administrators, staff, and students with disabilities, emphasizing the need for tailored strategies to support participation in physical activities
2	Michalsen et al., 2024	Norway	Cross-sectional	Adults	Intellectual	Environmental/ Structural Barriers	The study revealed 36% of 213 Norwegian adults with ID were sedentary. Primary barriers included transportation limitations (29%), health conditions (26%), and lack of day-center activities (17%). Significant correlations emerged between sedentary behavior and older age ($p=0.002$), mobility impairment ($p<0.001$), and epilepsy ($p=0.003$).
3	Ma et al., 2024	China; USA; New Zealand	Bibliometric review	Children and Adolescents	Multiple disability	Environmental/ Structural Barriers	The study analyzed 1,308 articles, revealing key research hotspots such as interventions and programs aimed at enhancing physical activity among disabled youth, along with their collaborative networks
4	Wildekamp et al., 2024	Netherlands	Cohort	Adults	Physical	Environmental/ Structural Barriers	Perceived PA barriers decreased significantly during the transition from rehabilitation to community-based PA, with capability and motivation barriers showing the strongest negative associations with PA levels. Tailored counseling during rehabilitation may mitigate barriers and promote sustained PA
5	Ascondo et al., 2023	Spain	Survey	Adolescents and Adults	Multiple disability	Intrapersonal Barriers	The findings indicate that personal barriers are more significant than environmental ones, with women perceiving more barriers than men. People with physical disabilities focus on physical improvement, while those with intellectual disabilities prioritize leisure and social aspects
6	Olasagasti-Ibargoien et al., 2023	Spain	Systematic review	Adults	Physical	Intrapersonal Barriers	The review found eight distinct types of barriers that women with physical disabilities face in engaging in physical activities. These barriers are influenced by gender, indicating that social environments play a crucial role in participation

Table 1 (continued)

No	Authors	Country	Research Methods	Target Population	Disability Type	Dominant Barriers	Result
7	Boucher et al., 2022	Canada	Interview	Children	Intellectual	Intrapersonal Barriers	The research identified four key themes: intrapersonal barriers, interpersonal barriers, intrapersonal facilitators, and interpersonal facilitators, highlighting factors that influence physical activity engagement among autistic youth with mild intellectual disabilities
8	McDermott et al., 2022	United Kingdom	Focus group discussions	Adolescents	Intellectual	Environmental/ Structural Barriers	The study identified individual (physical/psychological capabilities), interpersonal (social support), and environmental (school resources) factors influencing PA, highlighting the need for tailored, co-produced interventions within school systems
9	Yu et al., 2022	China	Survey/ observational methods	Children and Adolescents	Intellectual	Environmental/ Structural Barriers	The review included 32 studies, revealing 34 factors influencing physical activity. Key barriers included disability-specific issues and lack of support, while facilitators included high self-efficacy and parental involvement
10	Özkan, R. S., & Numanoğlu-Akbaş, 2022	Turkey	Cross-sectional	Caregivers	Physical	Environmental/ Structural Barriers	The study found that mothers of children with mild motor disabilities had higher physical activity levels compared to those with moderate-to-severe disabilities. None of the mothers achieved adequate physical activity levels
11	Declerck et al., 2021	Belgium	Survey	Adults	Physical	Environmental/ Structural Barriers	The research highlights significant barriers faced by sports clubs and centers in expanding adaptive physical activity and sports offerings for individuals with physical disabilities, emphasizing the need for targeted interventions to overcome these challenges
12	MacEachern et al., 2021	Canada	Cohort	Children and Adolescents	Multiple disability	Environmental/ Structural Barriers	The study found that 91% of children and adolescents with disabilities did not meet physical activity guidelines, with participation decreasing as age increased. Access to suitable environments was a primary barrier to participation
13	Mckenzie et al., 2021	Australia	Systematic review	Adolescents and Adults	Physical	Intrapersonal Barriers	The review included 19 studies, revealing that social connections and supportive environments are crucial for physical activity participation. An overarching theme of "finding the right balance" emerged, highlighting the importance of capability, opportunity, and motivation in this context
14	Jacinto et al., 2021	Portugal	Systematic review	Adults	Intellectual	Environmental/ Structural Barriers	The review identified five main groups of perceived barriers to physical activity participation: personal (6 topics), family (4 topics), social (13 topics), financial (1 topic), and environmental (1 topic)

primarily included adults, children-adolescents, and adolescents-adults, with limited studies focusing on older adults. Environmental/structural and intrapersonal factors emerged as the primary barriers for both disability groups. Analysis of 14 global studies (2021–2025) revealed complex patterns of PA barriers among individuals with physical and intellectual disabilities.

Environmental/structural barriers dominated (10 studies), particularly related to transportation, adaptive sports facilities, and institutional resource gaps. In Norway, 36% of adults with intellectual disabilities (ID) were physically inactive, with key barriers including transportation (29%), health conditions (26%), and lack of daily center programs (17%) (Michalsen et al., 2024). In Belgium, sports clubs faced significant challenges in providing adaptive PA for individuals with physical disabilities (Declerck et al., 2021). Meanwhile, in Canada, 91% of children and adolescents with disabilities failed to meet PA guidelines, with inadequate environmental access as the primary constraint (Barreno et al., 2021).

Intrapersonal barriers were identified in 4 studies, predominantly linked to motivation, gender-based stigma, and cognitive limitations. Women with physical disabilities in Spain encountered 8 unique gender-based barriers, including social stereotypes and insufficient inclusive facilities (Groenewegen et al., 2021; Smith & Monforte, 2021). For intellectual disabilities, challenges included limited comprehension of PA instructions Click or tap here to enter text.and caregiver dependency (Geuze et al., 2023). Regional variations highlighted significant disparities: developed countries (e.g., Norway, Belgium) prioritized infrastructural limitations, while developing nations (e.g., Turkey) faced motivational and resource-related challenges. In Turkey, mothers of children with severe motor disabilities exhibited notably lower PA levels, with 0% meeting daily recommendations (Özkan & Numanoğlu-Akbaş, 2022). A Spanish study (Ascondo et al., 2023) confirmed that personal barriers (e.g., self-perception) were more pronounced among women than men. Furthermore, a bibliometric analysis of 1,308 articles identified school-based interventions as a global research "hotspot."

Characteristics of Physical Activity Barriers

Individuals with physical and intellectual disabilities share common structural and social barriers, including transportation limitations (29% in Norway) and inadequate adaptive facilities (Carmichael et al., 2023) as well as social stigma—encompassing 8 gender-based barriers faced by women with physical disabilities (Olasagasti-Ibargoien et al., 2023) and social isolation among those with intellectual disabilities (Sakalidis et al., 2023). Both groups are further impacted by secondary health conditions (e.g., epilepsy, mobility impairments) and low motivation, albeit with differing underlying causes (chronic fatigue vs. diminished self-confidence).

Notably, distinct barriers exist between the two groups. For physical disabilities, key challenges include fatigue ($\beta = -0.34$, $^*p^* < 0.001$), chronic pain, gender-based barriers (Mayo et al., 2019), and age- or health-related declines in physical activity. In contrast, intellectual disabilities are characterized by cognitive limitations, caregiver dependency (Kreinbucher-Bekerle et al., 2022), and reduced physical activity due to life transitions (MacEachern et al., 2022).

Discussion

Interpretation of Key Findings

These findings align with prior literature acknowledging physical activity (PA) as a critical determinant of well-being for individuals with disabilities (Johnson et al., 2023). However, the analysis identifies two primary gaps: (1) limited exploration of external factors (accessibility, social support) compared to intrapersonal factors, and (2) overrepresentation of studies from high-income countries (Canada, the UK, Australia) with minimal inclusion of low- and middle-income nations (e.g., Turkey) (Declerck et al., 2021). This geographic disparity limits understanding of socioeconomic and cultural contexts influencing participation in resource-poor regions. Methodologically, quantitative approaches (e.g., surveys) dominated for data generalizability (7 studies), while qualitative methods (e.g., in-depth interviews) in 5 studies captured subjective experiences (Boucher et al., 2023; McDermott et al., 2022). Future integration of mixed-methods designs could enrich context-specific intervention evidence.

The findings underscore the multidimensional barriers to PA participation among individuals with disabilities, shaped by structural, intrapersonal, and sociocultural factors. The prominence of environmental/structural barriers—such as transportation limitations, inadequate adaptive facilities, and institutional resource gaps—resonates with the Social Determinants of Health framework, positing health inequities as products of systemic access disparities (Ashadi, 2024). For instance, high sedentariness among Norwegian adults with intellectual disabilities (Michalsen et al., 2024) and 91% non-compliance with PA guidelines among Canadian children with disabilities (MacEachern et al., 2022) reflect how infrastructural inadequacies disproportionately marginalize this population. These results align with global reports advocating inclusive urban planning and policy reforms to address accessibility gaps (Slavici, 2023).

Intrapersonal barriers related to gender stigma and cognitive barriers suggest a close relationship between disability experiences and sociocultural dynamics. A study in Spanish women with physical disabilities (Olasagasti-Ibargoien et al., 2023) described how gender-driven social norms intensify disability-related challenges, advocating for a feminist disability perspective in the study of physical activity. On the other hand, the dependence of people with intellectual disabilities on caregivers (Jacinto et al., 2021) highlights the need for interventions that prioritize self-determination. The interesting fact that barriers differ between physical and intellectual disabilities—such as fatigue ($\beta = -0.34$, $^*p^* < 0.001$) and chronic pain emerged as major concerns for people with physical disabilities, while cognitive dependence was higher for people with intellectual disabilities—requires a disability-specific approach. These findings are in line with the COM-B framework (Michie et al., 2011), which underlines the importance of strategies to address gaps in abilities, environmental opportunities, and motivational drivers.

Geographic disparities also deserve further attention. High-resource countries such as Norway and Belgium

report systemic barriers such as fragmented daily activity programs, while low-income areas such as Turkey face motivational barriers and resource scarcity (Özkan & Numanoğlu-Akbaş, 2022). This contrast highlights the inadequacy of one-size-fits-all interventions and strengthens the argument for context-specific solutions. For example, community-driven school-family partnerships in China (Yu et al., 2022) highlight the potential of local strategies in low-resource settings, while a Dutch rehabilitation program utilizing specialized counseling (Wildekamp et al., 2024) demonstrates the effectiveness of individualized care in a high-capacity system.

In summary, a comprehensive and intersectional approach is needed to reduce barriers to physical activity for populations with disabilities. Policymakers should prioritize investments in implementing inclusive infrastructure and stigma reduction initiatives, while clinicians should integrate disability-responsive practices that address cultural factors. Addressing these challenges can foster equitable PA engagement, which supports the United Nations agenda to reduce health disparities (UN, 2015).

Limitations and Future Directions

Methodological limitations of this study, including its reliance on cross-sectional data collection and self-report measures, limit causal interpretations and may introduce potential recall bias. Additionally, limited representation from low- and middle-income countries (LMICs) and non-English journal sources narrow the applicability of the results, given that approximately 80% of the global population with disabilities live in developing regions (WHO, 2024). Future investigations are recommended to adopt a longitudinal mixed-methods approach to better track temporal patterns and socio-environmental influences. Methodological innovations such as integrating wearable monitoring devices (Dan, 2020) and culturally appropriate intervention models are expected to strengthen empirical validity. There is also an urgent need to examine how global disruptions such as the COVID-19 pandemic—which has been shown to widen physical activity gaps (MacEachern et al., 2022)—impact disability-inclusive PA systems. These insights underscore the importance of multi-layered strategies that address the interplay of structural inequities, social norms, and personal barriers. Conceptual models such as the Australian COM-B (ability, opportunity, motivation-behaviour) framework, which examines the determinants of behaviour holistically (Mckenzie et al., 2021), offer a powerful framework for designing inclusive initiatives.

Future efforts should focus on multimodal interventions combining assistive technologies, community-based training, and family support systems (Knupper, 2018). Expanded research in LMICs—particularly in Africa and South America—is urgently needed to address region-specific barriers, such as limited healthcare access and cultural stigma (Adugna et al., 2020; Magnusson et al., 2021). International cross-sectoral partnerships could facilitate knowledge transfer and local adaptation of evidence-based strategies. Methodologically, integrating quantitative (e.g., longitudinal surveys) and qualitative (e.g., phenomenological studies) approaches will enable holistic analysis of PA barriers.

Physical activity not only enhances physical health but also mitigates social isolation and improves quality of life. Thus, interdisciplinary research spanning public health, psychology, and policy science is essential to design inclusive policies addressing the complex needs of individuals with disabilities (Bailie et al., 2023). Such efforts align with the United Nations Sustainable Development Goals (SDGs) to reduce health inequities and foster equitable participation (UN, 2015).

Conclusion

This systematic review identifies motivation, health status, and facility accessibility as primary determinants of physical activity (PA) participation among individuals with disabilities, with a predominance of evidence from high-income countries. While both physical and intellectual disabilities face comparable structural barriers, their root causes diverge—centering on physiological challenges (e.g., fatigue) in physical disabilities versus cognitive limitations in intellectual disabilities. The integration of quantitative and qualitative methodologies enriches the understanding of these multidimensional barriers. Addressing structural inequities and advancing global inclusion necessitates personalized interventions and cross-sectoral collaboration. Future efforts must prioritize context-driven holistic research frameworks to inform equitable PA promotion strategies for diverse disability populations.

Acknowledgement

The authors extend their gratitude to the leadership of Universitas Negeri Surabaya for supporting the Tri Dharma principles (education, research, community service) in higher education.

Conflict of Interest

All authors declare no conflicts of interest.

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На шляху до інклюзивної фізичної активності: Систематичний огляд даних наукометричної бази Scopus щодо багатовимірних бар'єрів при фізичних та інтелектуальних порушеннях

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Авторський вклад: A – дизайн дослідження; B – збір даних; C – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 9 с., 1 табл., 1 рис., 50 джерел.

Мета дослідження. Мета дослідження полягала в систематичному аналізі бар'єрів, що перешкоджають фізичній активності (ФА) серед осіб з фізичними та інтелектуальними порушеннями, інтегруючи модель аналізу поведінки COM-B (спроможність, можливість, мотивація) та концепцію соціальних детермінант здоров'я (СДЗ) для визначення загальних та специфічних проблем, пов'язаних з інвалідністю.

Матеріали та методи. Представлена наукова праця передбачала проведення систематичного огляду за методологією PRISMA щодо 14 досліджень, індексованих у наукометричній базі даних Scopus, які були опубліковані в період з 2021 по 2025 рік і проводилися в країнах з високим рівнем доходу (HIC) та країнах з низьким і середнім рівнем доходу (LMIC). Тематичний синтез класифікував бар'єри за середовищними/структурними, внутрішньоособистісними та соціокультурними сферами.

Результати. Результати показали, що середовищні/структурні бар'єри є переважаючими (10 досліджень), серед яких транспортні обмеження (29% у Норвегії), недоступність об'єктів (91% відсутності активності у канадських дітей) та брак інституційних ресурсів. Внутрішньоособистісні бар'єри (4 дослідження) включали дефіцит мотивації та гендерну стигматизацію (8 специфічних бар'єрів для жінок з фізичними порушеннями). Виявлено окремі проблематичні питання: особи з фізичними вадами стикалися з втомою ($\beta = -0.34$, $p < 0.001$) та хронічним болем, тоді як особи з інтелектуальними вадами зіткнулися з необхідністю допомоги з боку доглядачів та когнітивними обмеженнями. Географічні розбіжності підкреслили інфраструктурні бар'єри в країнах з високим рівнем доходу (наприклад, прогалини в адаптивних програмах Бельгії) порівняно з мотиваційними/ресурсними проблемами в країнах з низьким та середнім рівнем доходу (наприклад, 0% дотримання фізичної активності серед турецьких матерів).

Висновки. Результати дослідження наголошують на необхідності впровадження адаптованих багаторівневих інтервенцій, спрямованих на усунення бар'єрів, пов'язаних з інвалідністю, та системних нерівностей. До пріоритетних політичних завдань належать інвестиції в інфраструктуру, навчання осіб, які доглядають за особами з обмеженими можливостями, та зменшення стигматизації, що узгоджується з цілями сталого розвитку (ЦСР) 3 (Здоров'я) та 10 (Зменшення нерівності). Міжсекторальна співпраця та контекстно-орієнтовані стратегії мають вирішальне значення для операціоналізації інклюзивних концепцій фізичної активності на глобальному рівні.

Ключові слова: фізична активність, інвалідність та рівність у сфері охорони здоров'я, середовищна доступність, модель COM-B, інклюзивна політика, цілі сталого розвитку (ЦСР).

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Cite this article as: Ashadi, K., Ariani, L. P. T., Pulungan, K. A., Womsiwor, D., Sandi, I. N., & Zolkafi, M. A. A. (2025). Towards Inclusive Physical Activity: A Systematic Review of Scopus Evidence on Multidimensional Barriers in Physical and Intellectual Disabilities. *Physical Education Theory and Methodology, 25*(4), 983-991. https://doi.org/10.17309/tmfv.2025.4.28

Received: 16.05.2025. Accepted: 02.07.2025. Published: 30.07.2025