



RESEARCH ARTICLE

Academic Trends in Adapted Physical Education, Sports, and Physical Activity for Individuals with Intellectual Disabilities: Bibliometric Analysis (1993-2025 Years)

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Abstract

The purpose of this study is to examine global research trends, main topics, and the general scope of studies on adapted physical education, sports, and physical activity for individuals with intellectual disabilities. Synonyms related to key terms have been standardized using search operators. A comprehensive search was conducted in the Web of Science database on October 30, 2025, yielding 2,999 records. Only English-language, full-text, original research articles were included, resulting in 255 studies. This study utilized a bibliometric research design and adhered to the PRISMA 2020 guidelines. The 255 studies published in 35 journals between 1993 and 2025 showed steady growth in scientific output. Publication numbers peaked in 2022, while citations reached their highest level in 2024. The Journal of Applied Research in Intellectual Disabilities had the most publications, while Research in Developmental Disabilities was the most cited journal. Erasmus MC was identified as the most productive institution, and Spain was the leading country in terms of publication frequency. Furthermore, 92.7% of authors contributed to only one article, indicating limited long-term participation. Frequently used keywords included children, exercise, adults, Down syndrome, health, participation, and disabilities. Motor themes represented key research focuses, including intellectual disability, obesity, older adults, validity, childhood, and being overweight. Despite growing interest, significant gaps remain, highlighting the need for comprehensive policies and thorough evaluations. Overall, the findings provide a useful reference to guide future research and support continuous progress in adapted physical activity and education for individuals with intellectual disabilities. These insights highlight important priorities for future interdisciplinary collaborative work.

Keywords

Bibliometric Analysis, Intellectual Disability, Adapted Physical Education, Sports, Physical Activity

INTRODUCTION

Intellectual disability can be defined as a neurodevelopmental disorder of developmental origin characterized by persistent limitations observed in individuals' cognitive functions and adaptive behaviors (APA, 2013). These individuals may exhibit significant differences compared to their typically developing peers in many areas of development, such as social adaptation, motor development processes, daily living skills, and academic performance (Yılmaz & Mirze, 2024; Hekim & Tokgöz, 2016). In this regard, participation in physical activity or sports in terms

of intellectual disability is considered a fundamental intervention element not only for the development of biophysical capacity but also for self-management skills, socialization, and adaptation to psychosocial stimuli (Albaum et al., 2021; Han, 2025; Kashi et al., 2023).

Adapted physical education and sports is a specialized field of education and training that includes pedagogical processes structured within scientific principles designed to meet the cognitive, physical, social, and emotional needs of individuals with intellectual disabilities (Shields & Synnot, 2016; Tarani et al., 2022). In this field, teaching-learning methods, assessment tools, materials, and the environment should be adapted to the capacity

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of individuals with disabilities (Özkan & Kale, 2023; Bodde, & Seo, 2009). Numerous scientific studies in the literature indicate that physical activity, adapted physical education, and sports programs significantly contribute to motor skills such as flexibility, endurance, strength, and balance in individuals with intellectual disabilities. In addition, they contribute to significant improvements in psychosocial areas such as adaptive behaviors, social interaction, and attention performance (Pan & Mcnamara, 2022; Han et al., 2024; Wouters et al., 2020).

Adapted physical education and sports activities provide a social environment that enables individuals with intellectual disabilities to engage in physical activity in a more sustainable way, both structurally and motivationally. In particular, internationally organized sporting events such as the Special Olympics constitute important social platforms that increase these individuals' levels of social communication and interaction, self-perception, social acceptance, and participation (Pan & Davis, 2019; Crespo et al., 2024). Numerous scientific studies have demonstrated that sports-based interventions have significant positive effects on self-esteem, self-efficacy, social skills, and motivation. In this context, sports are recognized as more than just a recreational activity for intellectually disabled individuals; they are considered an inclusive education and rehabilitation tool that supports multidimensional development (Ristevski et al., 2024; Zhao et al., 2020).

Despite all these benefits of adapted physical education and sports, access to physical activity for individuals with intellectual disabilities is limited due to various negative attitudes, environmental and structural barriers (Bossink et al., 2017; Cartwright, 2017). Teachers' field competencies, material deficiencies, physical conditions of educational institutions, parents' lack of education, and negative attitudes in society are cited as key factors hindering these individuals' access to quality and regular physical activity (Mirze & Yılmaz, 2025; McDermott et al., 2022). This situation necessitates improving the quality of adapted physical education and sports practices, supporting the training processes for teachers graduating from the field, enabling the more widespread implementation of scientifically based program designs, conducting more scientific studies, and reviewing all previous scientific studies on the subject (Block et al., 2021; Hutzler et al., 2019).

In this context, using bibliometric analysis to examine trends in scientific publications related to adapted physical education, sports, and physical activities for individuals with intellectual disabilities is of great importance in identifying existing knowledge gaps and providing a guiding framework for future research (Liu et al., 2022; Saripek et al., 2024). A comprehensive evaluation of global research on adapted physical education, sports, and physical activity processes for individuals with intellectual disabilities will contribute to the development and improvement of policies in this area and the creation of targeted programs.

No bibliometric study has been found in the literature that evaluates scientific research on the process of adapted physical education, sports, and physical activity for individuals with intellectual disabilities and the factors affecting this process from a macro perspective. In this context, the aim of this planned research is to examine the important focal points, trends, and depth of global research on adapted physical education, sports, and physical activities for individuals with intellectual disabilities from a macro perspective and to provide a comprehensive definition of the research areas related to this topic.

To achieve these goals, answers were sought to the following questions within the framework of the defined topics:

- What are the basic facts about publications on the subject?
- What is the production of scientific articles and the average number of citations by year?
- Which journals publish the most articles and receive the most citations?
- Which institutions and countries publish the most articles, and which countries receive the most citations?
- Which countries are home to the corresponding authors, and which are single-country and multi-country publications?
- What are the article productivity numbers of authors according to Lotka's Law?
- Which articles receive the most citations?
- Which words are most frequently used and specific to the field?
- What are the trendiest topics and how are they distributed over the years?
- What is the thematic map and thematic evolution of the most frequently used keywords?

MATERIALS AND METHODS

Research Methodology

This study utilized a bibliometric research design and adhered to the PRISMA 2020 guidelines. Only English-language, full-text, original research articles that met the diagnostic criteria for intellectual disability were included. In the first stage, Web of Science (WoS) was selected as the source database. Then, the literature was reviewed to identify keywords related to the topic. As a result of the literature review, it was determined that the terms “adapted physical education,” “adapted physical activity,” and “para sport” were used with the terms “physical fitness,” “games,” “play,” “motor skills,” “motor performance,” “para-athlete,” “students with disabilities,” “special educational needs,” and “inclusion education.” It was determined that the terms used in relation to mental/intellectual impairment and disability were “intellectual disability” and “mental retardation.”

The identified keywords were searched for in the abstract (AB), title (TI), and author keywords (AK) sections. The identified words were standardized using search operators. The search was performed in the ‘advanced search’ section of the WoS database as follows: AB=(*“mental retardation”* OR *“intellectual disability”*) AND AB=(*“adapted”* OR *“physical education”* OR *“physical activity”* OR *“physical fitness”* OR *“games”* OR *“play”* OR *“motor skill”* OR *“motor performances”* OR *“para sport”* OR *“para athlete”* OR *“students with disabilities”* OR *“special educational needs”* OR *“inclusion education”*) OR TI=(*“mental retardation”* OR *“intellectual disability”*) AND TI=(*“adapted”* OR *“physical education”* OR *“physical activity”* OR *“physical fitness”* OR *“games”* OR *“play”* OR *“motor skill”* OR *“motor performances”* OR *“para sport”* OR *“para athlete”* OR *“students with disabilities”* OR *“special educational needs”* OR *“inclusion education”*) OR AK=(*“mental retardation”* OR *“intellectual disability”*) AND AK=(*“adapted”* OR *“physical education”* OR *“physical activity”* OR *“physical fitness”* OR *“games”* OR *“play”* OR *“motor skill”* OR *“motor performances”* OR *“para sport”* OR *“para athlete”* OR *“students with disabilities”* OR *“special educational needs”* OR *“inclusion education”*)).

Inclusion criteria: Original research articles that are relevant to the topic, published in English, with full text available, and include samples with intellectual disability that meet the diagnostic criteria for disability as outlined in the Diagnostic and Statistical Manual of Mental Disorders published by the American Psychiatric Association. Exclusion criteria are defined as books, book chapters, data articles, conference abstracts, presentations, review articles, systematic review and/or meta-analysis articles, scale development/adaptation studies, animal studies, samples of non-disabled women, duplicates, and engineering studies unrelated to the topic.

A search of the WoS database starting on 10/30/2025 identified a total of 2,999 articles published in English between 1993 and 2025. Subsequently, 255 articles were accessed by excluding books, book chapters, data articles, conference abstracts, proceedings, review articles, and other studies in all subject categories in the WoS database, as well as articles not written in English. Researchers reviewed all articles to determine whether they met the inclusion criteria for the study. As a result of the review, a total of 255 articles related to the topic were identified. The data collection and screening process of the study is shown in Figure 1. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) 2020 checklist was used as a guide for reporting (Page et al., 2021; Hür, 2021).

In the second stage, the full records and cited references of the 255 articles identified for the study were downloaded as a TXT file from the plain text file section of the WoS database. The downloaded data were combined and loaded into the R Studio Biblioshiny program, where the 255 articles were analyzed. The R Studio Biblioshiny program was used to tabulate and visually display the study results.

PRISMA 2020 research flow chart on the process of scanning publications focusing on adapted physical education, sports, and physical activity for individuals with intellectual disabilities in the WoS database for bibliometric analysis method (Page et al., 2021; Hür, 2021).

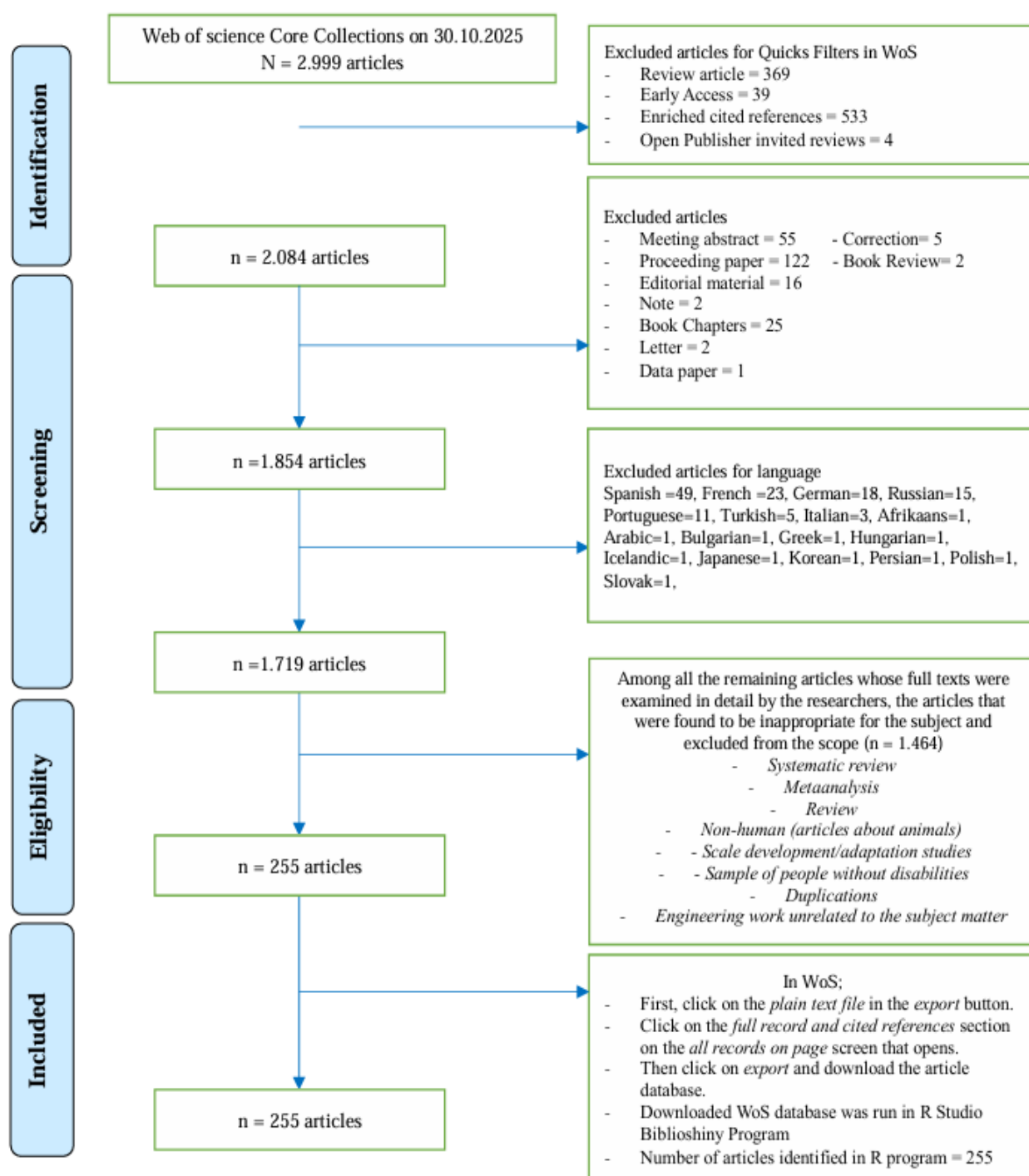


Figure 1. PRISMA 2020 research flow chart

RESULTS

Between 1993 and 2025, a total of 255 articles were published in 35 journals, and the average age of the articles was determined to be 9.8 years. In addition, the number of author keywords was determined to be 133, the number of references was 1774, and the average citations per document was 26.7. An increase in the number of articles produced

and the average number of citations over time was observed between 1993 and 2025. The highest number of articles produced was in 2022 (n=13), and the highest number of citations was in 2024 (n=580) (Figure 2). not comply with the rules of writing and APA are eliminated in the first stage by the editor. You should review your references and check their compliance with APA 7. Tables must be cited in the text together with the table number as “Table 1,2,3,4”.

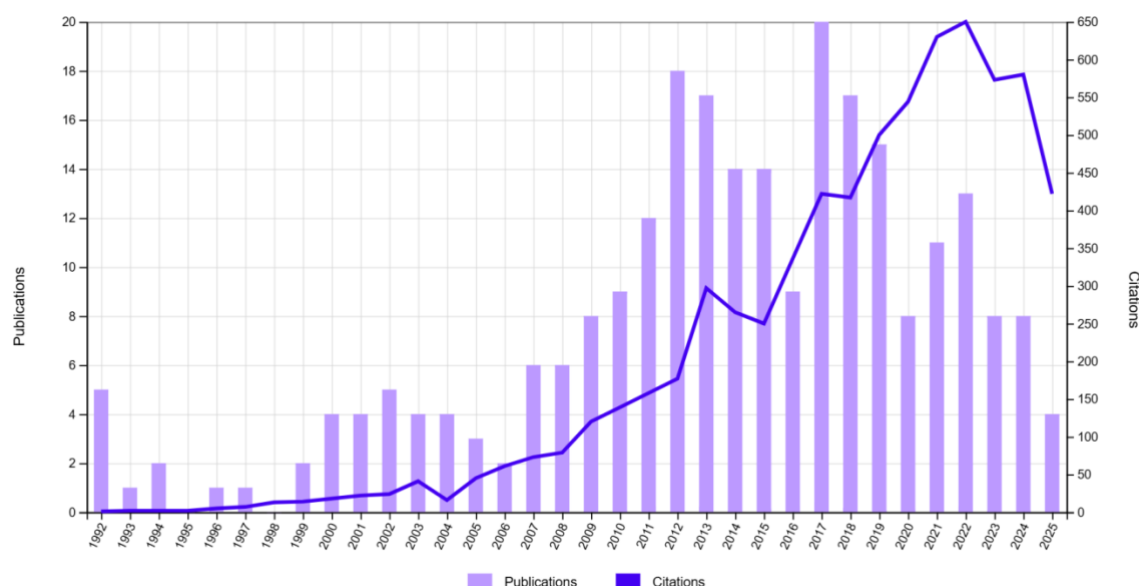


Figure 2. Annual scientific production and average citations per year

Table 1 shows that the five journals publishing the most articles on the subject are, in order, the Journal of Applied Research in Intellectual Disabilities, the Journal of Intellectual & Developmental Disability, Intellectual and Developmental Disabilities, Acta Facultatis Medicae Naissensis, and the International Journal

of Developmental Disabilities. The journals receiving the most citations are, in order, Research in Developmental Disabilities, Medicine & Science in Sports & Exercise, Journal of Intellectual Disability Research, Adapted Physical Activity Quarterly, and Journal of Applied Research in Intellectual Disabilities.

Table 1. Analysis of the most relevant sources and most local cited sources

Most relevant sources analysis			Most local cited sources analysis	
No	Journal name	Number of articles published	Journal name	Number of citations
1.	Journal of Applied Research In Intellectual Disabilities	5	Research in Developmental Disabilities	155
2.	Journal of Intellectual & Developmental Disabilities	4	Medicine & Science in Sports & Exercise	106
3.	Intellectual and Developmental Disabilities	3	Journal of Intellectual Disability Research	75
4.	Acta Facultatis Medicae Naissensis	2	Adapted Physical Activity Quarterly	69
5.	International Journal of Developmental Disabilities	2	Journal of Applied Research in Intellectual Disabilities	35

Table 2 show that the institutions that produced the most articles are Erasmus MC, Erasmus University Rotterdam, University of Illinois Chicago, University of Illinois Chicago Hospital, and University of Illinois System. When examining the institutions with the most publications, they were identified as Erasmus MC (n=8), Erasmus University Rotterdam (n=8), University of Illinois Chicago (n=4), University of

Illinois Chicago Hospital (n=4), and University of Illinois System (n=4). The countries producing the most scientific articles are Spain (16), USA (n=16), Netherlands (n=14), China (n=11), and Serbia (n=93) (Figure 3). The USA (n=252) was the country with the most citations, while Canada (n=73.30) was found to have the highest average number of citations.

Table 2. Analysis of the most relevant affiliations, countries' scientific production and most cited countries

Most relevant affiliations analysis				Countries' Scientific Production		Most cited countries		
No	Institution	Country of residence	Number of articles produced	Country	Article number	Country	Total citation	Average article citation
1.	Erasmus MC	Holland	8	Spain	16	USA	252	42.00
2.	Erasmus University Rotterdam	Holland	8	USA	16	Netherlands	226	37.70
3.	University of Illinois Chicago	USA	4	Netherlands	14	Canada	220	73.30
4.	University of Illinois Chicago Hospital	USA	4	China	11	Belgium	124	41.30
5.	University of Illinois System	USA	4	Serbia	7	Serbia	93	31.00

Table 3 show that when examining the top three publications by single and multiple countries according to the countries to which the corresponding authors belong, the Netherlands ranks first with 12% of 6 articles, 4 of which are single-country and 2 (33.3%) are multi-country

articles. The USA ranks second with 12% of 6 articles, all of which are single-country, and there are no multi-country articles. Spain ranks third with 10% of the articles (5 articles), 2 of which are single-country and 3 (60.0%) are multi-country.

Table 3. Analysis of corresponding author's countries

No	Corresponding Author's Countries	Article	Article %	SCP	MCP	MCP%
1.	Netherlands	6	12.0	4	2	33.3
2	USA	6	12.0	6	0	0.0
3	Spain	5	10.0	2	3	60.0
4	Belgium	3	6.0	2	1	33.3
5	Canada	3	6.0	3	0	0.0

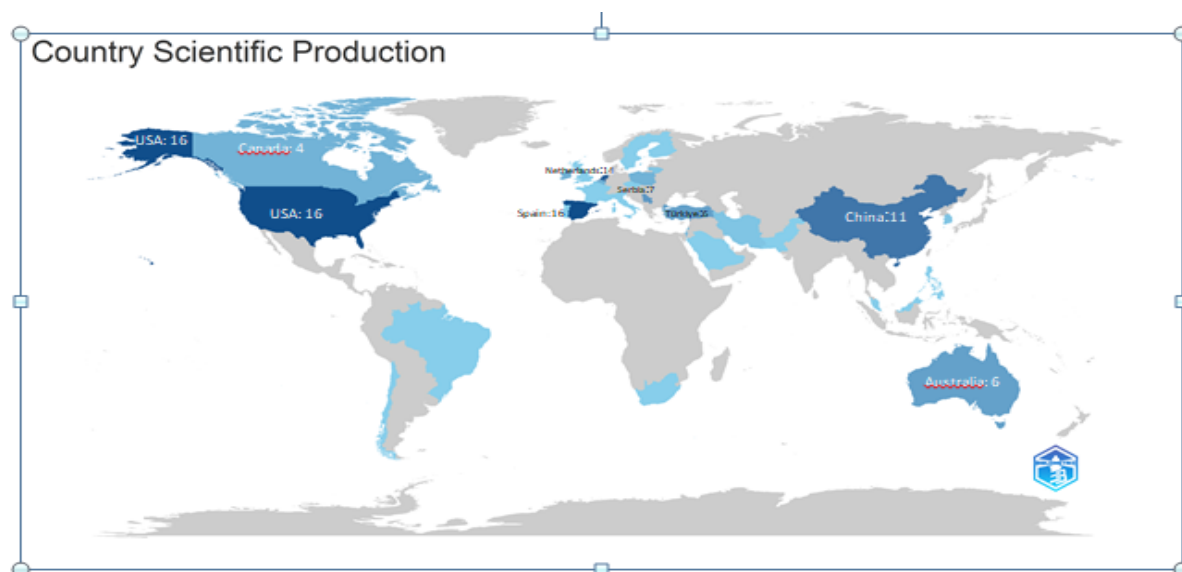
SCP: Single-Country Publications; MCP: Multi-Country Publications

Table 4 show that looking at the word and trend topic analysis, the most frequently used and specific words in the field are, in order: children, exercise, adults/people, Down syndrome, adolescents/individuals, health/mental retardation, participation/youth, barriers/fitness/older adults/overweight (Figure 5). The most trending topic headings are, in order: children, exercise, adults,

Down syndrome, individuals, mental retardation /health, youth, older adults/overweight. When examining the most trending topics by year, it was determined that children was the trending topic in 2011, exercise was the most frequent in 2013, adults was the trending topic in 2011, and the most current trending topics in 2018 and beyond focused on health and youth.

Table 4. Analysis of most frequent words, and trend topics

Most frequent words analysis (keywords plus)			Trend Topics Analysis (keywords plus)		
No	Word	Number	Word	Number	Year
1.	Children	18	Children	18	2018
2.	Exercise	14	Exercise	14	2018
3.	Adults/ people	12	Adults	12	2016
4.	Down-syndrome	11	Down-syndrome	11	2014
5.	Adolescents/ individuals	10	Individuals	10	2014
6.	Health/ mental-retardation	9	Mental-retardation	9	2014
7.	Participation/ youth	7	Health	9	2019
8.	Barriers/ fitness/ older-adults/ overweight	6	Youth	7	2019



Note: The USA is one country

Figure 3. Countries' scientific article production

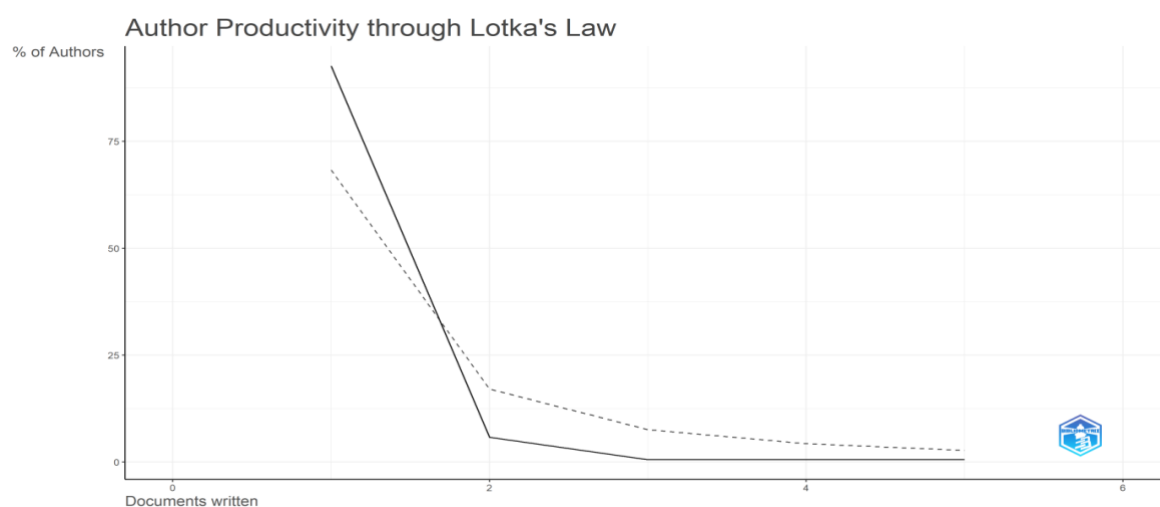


Figure 4. Author productivity through Lotka's Law

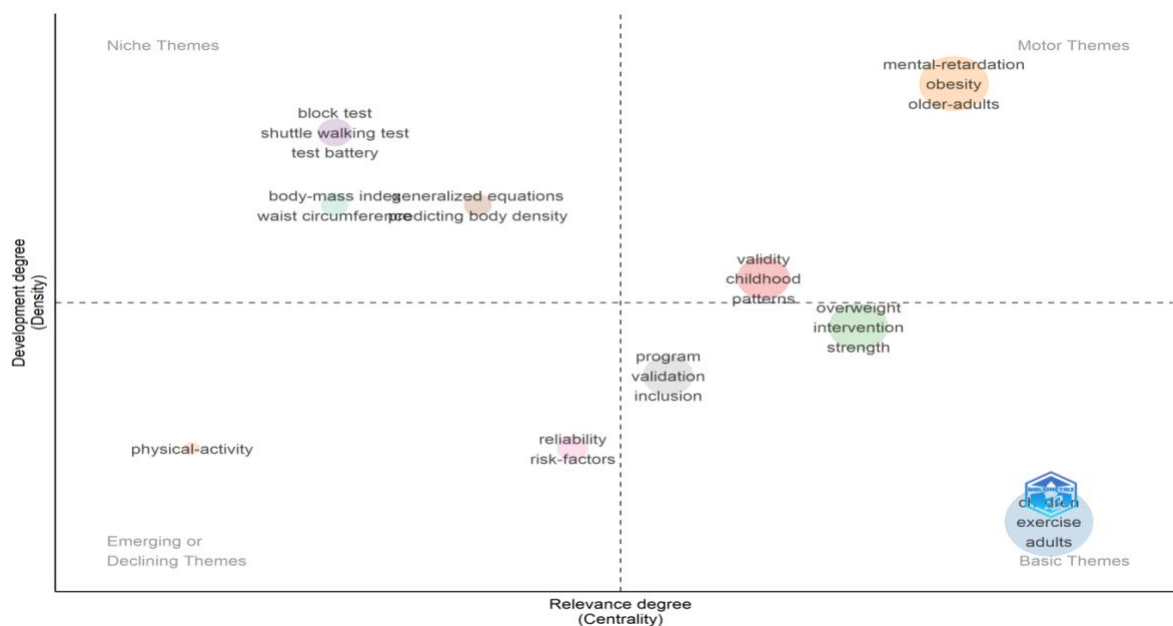


Figure 5. Thematic map (notation via keyword plus)

When Figure 5 is examined, it is determined that the most frequently used motor themes in the field, in order of circle size, are the conceptual integrities of mental retardation, obesity, older adults, validity, childhood, and overweight. The main themes in the study, in order of circle size, are the conceptual integrities of children, exercise, adults, intervention, strength, program, validation, inclusion, and patterns. The niche themes of the study are the conceptual integrities of block test, shuttle walking test, test battery, body-mass index, generalized equations, predicting body density, and waist circumference. The least studied and emerging themes in the field are the conceptual integrities of physical activity, reliability, and risk factors.

Table 5. Most Locally Cited Documents

Author / Year / Jurnal /Doi	Title	Local citations	Pupose	Design	Participant	Data Collection Tools	Result
Andrew Graham & Greg Reid (2000). Research Quarterly for Exercise and Sport. Doi.	Physical Fitness of Adults with an Intellectual Disability: A 13-Year Follow-up Study	7	This study was to describe the change in physical fitness of middle-aged adults with an intellectual disability over a period of 13 years.	Survey	32 middle-aged adults with an intellectual disability	Canadian Standardized Test of Fitness	Physical fitness levels of the participants were low when compared to those without a disability and declined over the 13 years. In addition, the magnitude of change over the 13 years, as compared to those without a disability, was greater for male and female participants for body mass index and percentage of body fat and for female participants for cardiovascular endurance and sit-ups.
Golubović, Š., Maksimović, J., Golubović, B., & Glumbić, N. (2012). Research in Developmental Disabilities. Doi.	Effects of exercise on physical fitness in children with intellectual disability	7	Examined the effects of carefully designed physical exercise programs on the development of physical fitness in children with ID	Survey	The sample population consisted of 87 young school-age children with ID	All the participants were assessed using Eurofit Test Battery	The results were analyzed in terms of participation in the exercise program and level of intellectual functioning. While ID children scored significantly lower on fitness tests when compared with typically developing children, the study revealed an association between degree of ID and physical fitness.
Temple, Vivienne A. (2007). International Journal of Rehabilitation Research. Doi.	Barriers, enjoyment, and preference for physical activity among adults with intellectual disability	5	Study was to examine the relationships between participation in physical activity/sedentary behaviour and factors consistent with behavioural choice theory: enjoyment, preference, and barriers.	A descriptive correlational design	37 adults with intellectual disabilities	Pedometers, Enjoyment, barriers, and preference questionnaire (The Physical Activity and Health Questionnaire developed by Salmon et al. (2003) as a mail survey was modified for use as an administered survey)	The factor that stands out from this study for the least active individuals was the lack of accessibility of physical activity options. Ensuring that the effort needed to engage in physical activity for these individuals is minimized is important. In addition, the higher preference for sedentary activity among the least active individuals suggests that it will be valuable to examine what attracts adults with an intellectual disability to particular

							physical activities and what aspects of participation they find reinforcing.
Foley, J.T., Bryan, R.R. & McCubbin, J.A. (2008). Journal of Developmental and. Doi.	Daily Physical Activity Levels of Elementary School-Aged Children With and Without Mental Retardation	3	The purpose of this study was to investigate the physical activity levels of elementary school-aged children with and without MR in both school, after-school and weekend environments.	Survey	9 children with mild MR and 33 children without (NMR).	Accelerometers	While at school, physical activity levels for children with MR were significantly lower during both recess and physical education, respectively. After school and weekend physical activity levels for children with MR were significantly lower, respectively. The findings of this study indicate that the disparity in physical activity in individuals with MR begins as early as the elementary school years and is measurable across environments.
Elmahgoub, S.M., Lambers, S., Stegen, S. et al., (2009). European Journal of Pediatrics. Doi.	The influence of combined exercise training on indices of obesity, physical fitness and lipid profile in overweight and obese adolescents with mental retardation	2	This study investigated the effect of combined exercise training on indices of body composition, physical fitness and lipid profile in adolescents with mental retardation.	Survey	Thirty adolescents with mental retardation	Body composition, Lipid profile, Maximal cardiopulmonary exercise test, Six-minute walk test, Strength	In comparison with the control group, weight, body mass index, waist and fat mass decreased significantly, while fat-free mass increased. The level of triglycerides, total cholesterol and low-density lipoprotein decreased significantly, while high-density lipoprotein increased. Muscle strength, muscle fatigue resistance and sit-to-stand were ameliorated. PeakVO2/peak power decreased significantly. The distance covered in the 6-min walk test (6MWT) increased with 50 m.

Table 5 shows detailed explanations of the most cited articles, including the author, journal, article title, year, DOI number, number of local citations, study purpose, method, participants, data collection tools, and results sections.

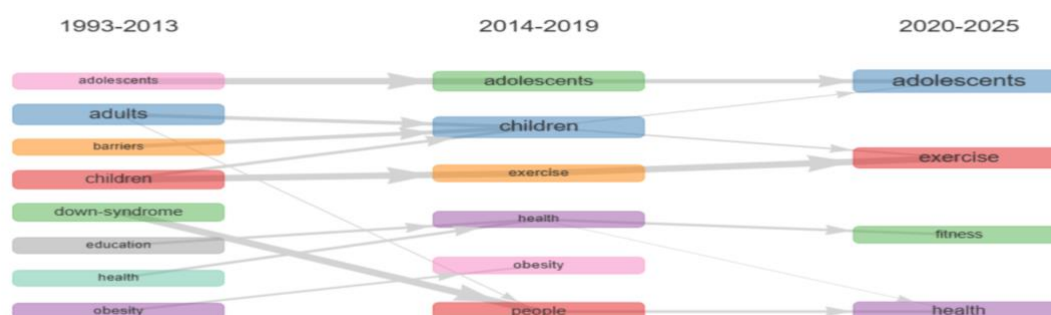


Figure 6. Thematic evolution (notation via keyword plus)

Figure 6. Examining the thematic evolution of words, that is, their change over time, the bibliometric analysis program determined the time period cutoff points as 1993-2013, 2014-2019, and 2020-2025. Within these three different time periods, the most frequently used themes between 1993-2013 were 'adolescents, adults, barriers, children, down-syndrome, education, health, obesity,' respectively; the most frequently used themes between 2014-2019 were 'adolescents, children, exercise, health, obesity, and people,' respectively; and the most frequently used themes between 2020-2025 were 'adolescents, exercise, fitness, and health,' respectively.

DISCUSSION

A total of 255 articles have been published on the subject over the last 32 years (1993-2025), and the number of publications and citations has increased annually. This demonstrates that academic interest in the topic has increased over time, particularly in recent years. However, some critical areas require further research.

Despite a wealth of supporting data demonstrating the negative impact of physical activity and increasingly sedentary lifestyles on health, published by the WHO (2020) in the WHO Guidelines on Physical Activity and Sedentary Behavior report, significant evidence gaps persist (Albaum et al., 2021; Han, 2025; Kashi et al., 2023). Evidence is particularly scarce in low- and middle-income countries and economically disadvantaged or underserved communities, and evidence from subpopulations, including individuals with disabilities, is insufficient. It emphasizes the need for further research investment to generate evidence in these areas (WHO, 2020). Similarly, the International Charter of Physical Education, Physical Activity, and Sport, prepared by UNESCO (2015), appears to align with the objectives of encouraging and participating in multi-sectoral, translational research to address the knowledge gap regarding the inclusion of individuals with disabilities in physical activity contexts (Shields & Synnot, 2016; Tarani et al., 2022).

The study found that the journals publishing the most articles on this topic were those that focused directly on intellectual and developmental disabilities and addressed fundamental issues in the field. However, the most cited journals were not limited to the field of developmental disabilities but

rather were interdisciplinary journals that appealed to a broader audience. It is believed that the interdisciplinary nature of these journals, which address adapted physical activity studies within the context of both disability and sport sciences, contributes to their broader readership and higher citation counts.

Research hospitals and academic institutions are the institutions that produce the most articles in the study, and these institutions directly contribute to the scientific impact of the countries in which they are located. According to the Times Higher Education World University Rankings (THE WUR) 2025 world university rankings, these institutions are reported to be among the highest ranked and have high research quality (The Wur, 2025). Therefore, it can be argued that these institutions are driving the development of the field through their advanced research infrastructure, funding sources, and international collaborations (Pan & McNamara, 2022).

When evaluated by country, Spain, the USA, and the Netherlands were found to produce the most articles on the subject, while the most cited countries were the USA, Netherlands, and Canada. Among these countries, the USA and the Netherlands stand out both in terms of article production and in terms of receiving the most citations. Furthermore, it was determined that the Netherlands and Spain produced the most publications through international collaborations with co-authors (Han et al., 2024; Wouters et al., 2020). However, the USA was found to have no country-specific collaborations on the subject. Furthermore, according to the Organisation for Economic Co-Operation and Development (OECD) (2024) report, the USA and the Netherlands maintained their growth rates and ranked first in global academic publications with their investments in scientific research, while Spain gained momentum in both economic and scientific studies (OECD, 2024). Therefore, it can be said that these countries have produced an increasing number of articles in this subject area due to their high research capacity, strong academic institutions, developed research infrastructure, and extensive financial resources, as well as their relative immigration status (Block et al., 2021; Hutzler et al., 2019).

The first of the three most cited articles in the study examined changes in the physical fitness of middle-aged adults with intellectual disabilities over a 13-year period. For this purpose,

cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition were assessed using the Canadian Standardized Fitness Test. The participants' physical fitness levels were found to be lower compared to those without disabilities and to have decreased over the 13 years. Furthermore, changes in body mass index and body fat percentage were found to be greater in male and female participants over the 13 years, and in cardiovascular endurance and sit-ups compared to those without disabilities (Liu et al., 2022; Graham & Reid, 2000). Another top-ranked article, "Effects of exercise on physical fitness in children with intellectual disability," examined the effects of designed physical exercise programs on the development of physical fitness in children with intellectual disabilities. Forty-two children with intellectual disabilities and 45 typically developing children were assessed using the Eurofit Test Battery. Although children with intellectual disabilities scored significantly lower on fitness tests compared to typically developing children, the study demonstrated a relationship between the degree of intellectual disability and physical fitness (Golubović et al., 2021; Saripek et al., 2024).

The second-ranked article, "Barriers, enjoyment, and preference for physical activity among adults with intellectual disability," examined the relationships between physical activity participation/sedentary behavior and factors consistent with behavioral choice theory: enjoyment, preference, and barriers. The daily step counts of 37 adults with intellectual disabilities were measured using pedometers for one week, and associations with barriers, enjoyment, and preference were calculated from the participants' survey responses. As a result, they stated that the prominent factors for individuals were the lack of access to physical activity options and the cost of participation, as well as the fact that individuals enjoyed these activities and their physical activity levels were low (Mirze & Yilmaz, 2025; Temple-Vivienne, 2007).

The third-ranked study is "Daily Physical Activity Levels of Elementary School-Aged Children With and Without Mental Retardation." The study investigated the physical activity levels of elementary school-aged children with and without intellectual disabilities in both school, after-school, and weekend settings. Accelerometers were used to record the physical activity levels of

33 children. The study found that children with intellectual disabilities had significantly lower physical activity levels during their school years, both during recess and physical education. It was determined that children with intellectual disabilities had significantly lower after-school and weekend physical activity levels, and that the disparity in physical activity among children with intellectual disabilities began in the elementary school years and was measurable across different settings (McDermott et al., 2022; Foley et al., 2008).

A common characteristic of these articles is that while individuals with intellectual disabilities predominate, they also include typically developing individuals, and that the common topics examined are particularly focused on physical activity. When the common findings from the studies are examined, it is clear that individuals with intellectual disabilities have low physical activity levels. The findings of these articles appear to be consistent with the WHO Guidelines on Physical Activity and Sedentary Behavior, prepared by WHO (2020), and the International Charter of Physical Education, Physical Activity, and Sport, prepared by UNESCO (2015). However, some limitations of the most frequently cited articles should be taken into account (Ristevski et al., 2024; Zhao et al., 2020). These include small sample sizes, lack of a control group, limitations of adapted measurement tools, and short-term follow-up. A word analysis revealed that the most frequently used key words related to the topic were "children, exercise, adults/people, down-syndrome, adolescents/individuals, health/mental-retardation, participation/youth, barriers/fitness/older-adults/overweight." This suggests that research in the field examines the lifelong physical activity levels of individuals with intellectual disabilities, the effects of exercise programs, health risks (obesity, etc.), and their effects on physical fitness. It can be argued that research in this field embraces a performance- and participation-based perspective (barriers, participation) as well as a developmental perspective (Pan & Davis, 2019; Crespo et al., 2024). When examining the thematic map (conceptual structure) of the most frequently used words in relation to each other in the publications, the upper right region of the map consists of motor themes, and these themes are designated as high density (degree of development) and high centrality (degree of importance). The larger the circles on the

map, the more frequently used these themes are in the field. The lower right region has low density and strong centrality. The main themes are clusters of concepts that are low in density but high in importance in the field. The upper left region shows niche themes expressed with high density and low centrality. Niche themes are themes that are well-developed in the field but low in importance in the field. The lower left region shows themes characterized by low density and weak centrality. These themes are emerging themes in the field that require further study or are gradually losing importance (Aria & Cuccurullo, 2017; Kumar et al., 2023). The most frequently used motor themes in the studies were found to consist of the conceptual integrities of 'mental retardation, obesity, older adults, validity, childhood, and overweight.' The main themes in the study were found to consist of the conceptual integrities of 'children, exercise, adults, intervention, strength, program, validation, inclusion, and patterns.' The niche themes of the study were determined to consist of the conceptual integrities of 'block test, shuttle walking test, test battery, body-mass index, generalized equations, predicting body density, and waist circumference.' The least studied themes in the field and emerging themes in the field were identified as consisting of the conceptual integrities of physical activity, reliability, and risk factors, respectively. This suggests that understudied areas, particularly adapted physical education for individuals with intellectual disabilities and sports physical activity, are not yet adequately represented in the literature but are becoming increasingly important.

The thematic evolution of the words revealed that the most frequently used themes between 1993 and 2013 were, respectively, 'adolescents, adults, barriers, children, down syndrome, education, health, and obesity.' The most frequently used themes between 2014 and 2019 were, respectively, 'adolescents, children, exercise, health, obesity, and people.' The most frequently used themes between 2020 and 2025 were, respectively, 'adolescents, exercise, fitness, and health.' An examination of this thematic evolution reveals a significant transformation in the focus of research over the three-period period. Between 1993 and 2013, studies were conducted across a wide range of developmental periods, with disability, accessibility, and health-education being particularly prominent. Between 2014 and 2019, the focus of research, particularly on combating

obesity, promoting physical activity, and general public health, increased (Bossink et al., 2017; Cartwright, 2017). This can be interpreted as a shift in research focus to broader populations, with disability themes giving way to physical activity-centered topics. Between 2020 and 2025, however, the focus of research narrowed to health behaviors, physical fitness, exercise habits, and, in particular, adolescent health.

Limitations

Only original research articles on the subject, published in English using the WoS database within a specific time period and with accessible full-text, were included in the study.

Conclusion and Recommendations

This study determined that scientific research on adapted physical education, sports, and physical activity for individuals with intellectual disabilities increased between 1993 and 2025, but this research was largely concentrated in developed countries. This suggests a growing academic interest in adapted physical education, sports, and physical activity for individuals with intellectual disabilities in developed countries. While there has been increasing academic interest in the themes of physical activity, physical fitness, disabilities, and participation for individuals with intellectual disabilities between 1993 and 2025, the field still harbors significant gaps. While the increase in publication and citation numbers indicates a strengthening global awareness of the impact of physical activity on lifelong health, as highlighted in the WHO (2020) and UNESCO (2015) reports, there remains a lack of evidence for subpopulations such as disadvantaged communities and individuals with disabilities. It is understood that the most productive countries and institutions in the field contribute to and shape the literature through their high research infrastructure and international collaborations. Thematic analyses reveal that studies have shifted over the years from a general disability and accessibility perspective to physical activity, obesity, and health behaviors, and more recently, to the physical fitness and health habits of adolescents. However, research on individuals with intellectual disabilities in the context of adapted physical education, sports, and physical activity remains insufficient, and these themes stand out as areas for future development in the field.

Recommendations

Larger sample sizes, longitudinal, and multidisciplinary studies can be conducted.

Global collaborations should be increased; internationally comprehensive databases and monitoring systems can be established.

Broader international collaborations can be established among universities, research hospitals, and high-impact academic institutions. This will both increase data diversity and contribute to the development of the field's scientific capacity.

Intervention models that include school settings, community-based programs, and family participation can be developed, and their effects can be evaluated in multiple settings.

Policy-oriented approaches that include factors such as accessibility, motivation, and environmental regulations should be developed to reduce barriers to participation in physical activity.

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Conflict of interest

No potential conflict of interest was reported by the author(s).

Ethics Statement

Since the data for this study were obtained using document analysis techniques and by examining scientific articles found in the Web of Science database, ethical committee approval was not required for the study.

Authors' Contributions

Study Design: BK and AA; Data Collection: BK and AA; Statistical Analysis: BK and AA; Data Interpretation: BK and AA; Manuscript Preparation: BK and AA; Literature Review: BK and AA. All authors have read and approved the published version of the manuscript.

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