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Movement and Physical Development in Early Childhood - Insights from Namibia and South Africa: A Scoping Review

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Scoping Review

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Abstract

Background: Physical activity and movement are fundamental to healthy child development. Ensuring equitable access to adequate physical activity opportunities for all young children remains an important area of focus in South Africa and Namibia. Despite the well-documented importance of movement in early childhood, little is known about the scope of available evidence on movement and physical development for children from birth to school age in these two Sub-Saharan countries.

Methods: To address this gap, a scoping review was conducted. Searches across three academic databases (PubMed, SPORTDiscus, Scopus) yielded 1309 records. An additional targeted grey literature search across 15 relevant websites was conducted. A total of 38 sources were included.

Results: Of the 38 sources, 32 focused on South Africa and only six on Namibia, all of which were grey literature. Five thematic categories were identified: (1) policies, curricula and guidelines, (2) current state of movement and physical development, (3) Early Childhood Development (ECD) centres and infrastructure, (4) programmes and initiatives, and (5) assessment and monitoring. South Africa has established a relatively comprehensive policy framework; however, further efforts to support consistent implementation and strengthen motor development outcomes remain important. Namibia has developed foundational structures and practical teaching resources, with opportunities to expand its academic evidence base.

Conclusion: This scoping review indicates areas where current evidence is still emerging, particularly in Namibia. Both countries would benefit from stronger framework implementation, improved resources, teacher training and caregiver awareness. Future research may consider descriptive approaches in Namibia and longitudinal evaluations in South Africa.

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List of abbreviations

CAPS	Curriculum and Assessment Policy Statement
ECD	Early Childhood Development
ELOM	Early Learning Outcomes Measure
IIEP	International Institute for Educational Planning
MVPA	Moderate to Vigorous Physical Activity
NCS	National Curriculum Statement
PE	Physical Education
PRISMA	Preferred Reporting Items for Systematic reviews and Meta-Analyses
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund

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1. Introduction

Physical activity and movement are fundamental to healthy child development. From birth, movement is the primary means through which young children explore their environment, develop motor competencies and build the foundations for cognitive, social and emotional growth (World Health Organization, 2019; Zarotis, 2020). Physical education, physical activity and sport are internationally recognized as fundamental rights (UNESCO, 2015). International bodies, including the World Health Organization (2019), have developed guidelines acknowledging that the promotion of healthy movement behaviours must begin in the earliest years of life, as habits and lifestyles are shaped by caregivers and the immediate environment during this period.

At the same time, movement and physical development in early childhood represent an area with considerable scope for greater attention in low- and middle-income countries such as Namibia, where foundational challenges such as reducing child mortality and improving sanitation, nutrition, and overall health continue to take precedence (UNICEF Namibia, n.d.).

The author's interest in this topic was sparked by a guest lecture in which a practitioner from Namibia described how physical education in schools is not always adequately prioritised, given the limited availability of sports materials and the competing demands of other subjects. This reality raises important questions about how movement is valued and supported in early childhood settings across the region.

South Africa and Namibia offer an instructive example of how two neighbouring countries in the same region approach this topic. While they share certain developmental challenges, their early childhood development systems differ considerably in terms of policy development, programme availability, institutional capacity and academic research in this field, as becomes apparent through the research conducted for this paper. Ensuring equitable access to quality early childhood education programmes and institutions remains an important area of focus for both countries (Department of Social Development & Economic Policy Research Institute, 2014; Office of the First Lady, 2017). As the literature makes clear, both countries are navigating the complex task of building ECD systems capable of supporting the holistic development of young children, including their physical development.

In South Africa, a relatively comprehensive early childhood development policy framework exists, including the National Integrated ECD Policy 2015 (Republic of South Africa, 2015) and the South African 24-Hour Movement Guidelines for Birth to Five Years, released in December 2018, as the first such guidelines from any low- and middle-income country (Draper et al., 2020a). A significant milestone was reached in late 2024 when Grade R was made mandatory for South African children (Republic of South Africa, 2024). As this policy was introduced only recently, it is too early to assess its full impact on enrolment rates in ECD programmes, where data from 2022 indicated that fewer than one third of children aged zero to four were participating in such programmes (Department of Basic Education & UNICEF, 2026).

In Namibia, the context presents its own distinct characteristics. Pre-primary education is not compulsory and access to such programmes remains limited, particularly for children from rural communities (Ministry of Education, Arts and Culture & National Institute for Educational Development, 2016; UNICEF Namibia, 2020). In 2019, 84% of children in Namibia did not attend ECD programmes and 95% did not attend pre-primary school (UNICEF Namibia, 2020, 1:21).

Given the well-documented importance of physical activity and motor development in the first years of life, a scoping review is well suited to systematically map existing evidence in this regional context, clarify what is currently known and highlight directions for future inquiry (Pollock et al., 2024).

Understanding what currently exists in terms of policies, programmes and research evidence on movement and physical development of children between birth and school age in these two countries is a valuable step towards strengthening practice in this field. To date, no scoping review has mapped this evidence base for South Africa and Namibia combined. This review therefore asks: "What evidence exists on movement and physical development in children from birth to school age in South Africa and Namibia across policies, curricula, programmes and initiatives?"

This paper is structured as follows. Section 2 describes the methodology, including search strategy, inclusion and exclusion criteria and the selection process used for this scoping review. Section 3 presents the identified sources, organised thematically as results. Section 4 discusses the key findings, draws implications for practice and outlines promising directions for future research.

2. Methodology

This study was conducted as a scoping review that was informed by the nine steps proposed in the framework by Pollock et al. (2024). This approach was chosen because scoping reviews are designed to systematically map existing evidence on a relatively broad topic, provide an overview of what is known and identify areas where further investigation would be worthwhile, rather than assess the quality of individual sources (Pollock et al., 2024). This made the scoping review the most suitable methodology for the purposes of this paper.

2.1 Objective and Research Question

The objective of this review was to map the existing evidence on movement and physical development in children from birth to school age in South Africa and Namibia. The research question was developed using the Population, Concept, Context (PCC) framework as recommended by Peters et al. (2020).

- Population: Children of pre-primary age (0–6 years)
- Concept: Movement, physical development, motor development and how these are addressed in policies, curricula, programmes and initiatives
- Context: South Africa and Namibia

From this, the following research question was derived: "What evidence exists on movement and physical development in children from birth to school age in South Africa and Namibia across policies, curricula, programmes and initiatives?". The research question evolved progressively during the search process. The initial focus on government policies and supporting programmes for physical activity at pre-primary level was broadened to include all evidence on movement and physical development in early childhood, encompassing motor development and active play, while maintaining geographic context.

2.2 Inclusion and Exclusion Criteria

Inclusion and exclusion criteria were defined prior to the search and applied consistently throughout the screening process.

Inclusion Criteria:

- Studies, documents and reports addressing movement, physical activity, motor development or physical education in children from birth to school age
- Studies, documents and reports specifically on South Africa, Namibia or both
- Multi-country studies, documents and reports where South Africa or Namibia are reported as separate countries with country-specific data
- Studies, documents and reports written in English

- Journal articles or grey literature such as government documents, policy frameworks, curricula, programme materials or reports

Exclusion Criteria:

- Studies, documents and reports in languages other than English
- Studies, documents and reports focused on aggregated regional data without separate country-level data for South Africa or Namibia
- Documents focused exclusively on nutrition, clinical health or disease, with little or no consideration of motor development or movement
- Opinion pieces, editorials, conference abstracts or protocol papers
- Undergraduate, postgraduate and doctoral theses and dissertations
- Documents where the full text was not accessible

2.3 Search Strategy

Prior to conducting the search, key terms were identified and compiled into a table (see Appendix). This process clarified that movement in early childhood encompasses not only physical activity and sport but also the development of fundamental motor competencies, which informed the inclusion of motor development and motor skills as search terms.

The search was conducted in two phases: A systematic search of academic databases and a targeted grey literature search.

2.3.1 Academic Database Search

Three academic databases were searched: PubMed, SPORTDiscus and Scopus. The following search strings were applied across all three databases:

1. (guidelines OR guideline OR regulation OR regulations OR curriculum OR curricula OR policy OR policies) AND (programs OR program OR initiatives OR initiative OR projects OR project OR actions OR action OR measures OR measure) AND (physical activity OR sports OR sport OR exercise OR fitness OR physical education OR PE) AND (pre-primary OR preschool OR kindergarten OR early childhood education) AND South Africa

2. (guidelines OR guideline OR regulation OR regulations OR curriculum OR curricula OR policy OR policies) AND (programs OR program OR initiatives OR initiative OR projects OR project OR actions OR action OR measures OR measure) AND (physical activity OR sports OR sport OR exercise OR fitness OR physical education OR PE) AND (pre-primary OR preschool OR kindergarten OR early childhood education) AND Namibia

3. (physical activity OR sports OR sport OR exercise OR fitness OR physical education OR PE) AND (pre-primary OR preschool OR kindergarten OR early childhood education) AND (South Africa OR Namibia)

4. (guidelines OR guideline OR regulation OR regulations OR curriculum OR curricula OR policy OR policies) AND (physical activity OR sports OR sport OR exercise OR fitness OR physical education OR PE) AND (pre-primary OR preschool OR kindergarten OR early childhood education) AND (South Africa OR Namibia)

5. (programs OR program OR initiatives OR initiative OR projects OR project OR actions OR action OR measures OR measure) AND (physical activity OR sports OR sport OR exercise OR fitness OR physical education OR PE) AND (pre-primary OR preschool OR kindergarten OR early childhood education) AND (South Africa OR Namibia)

6. (early childhood development OR ECD) AND (movement OR motor skills OR motor development OR gross motor OR physical development OR active play OR sport OR physical education) AND (policy OR policies OR curriculum OR curricula OR guidelines OR guideline OR framework OR programme OR program OR initiative OR initiatives) AND (South Africa OR Namibia) AND (infant OR toddler OR preschool OR pre-primary OR "under 6" OR "0-6") NOT (death OR disease OR nutrition OR malnutrition OR HIV OR mortality OR vaccine)

The initial search across all databases and strings yielded 1309 records. Following the removal of duplicates, 469 unique records remained for screening (see Figure 1).

2.3.2 Grey Literature Search

A targeted grey literature search was conducted through systematic browsing of relevant organisational and government websites. The following webpages were searched:

South Africa:

- Department of Basic Education
- UNICEF South Africa
- South African Council for Educators
- ECD Info Hub
- National Department of Health

Namibia:

- National Institute for Educational Development (NIED)
- Ministry of Education, Arts and Culture
- UNICEF Namibia

Broader international sources:

- UNESCO IIEP
- World Health Organization (WHO)
- UNESCOdoc

- African Union, Division of Sports
- Jacobs Foundation
- Roger Federer Foundation
- Kazibantu

Each website was browsed systematically by navigating relevant sections such as publications, resources, curricula, reports or documents. Given the varying structures of these websites, the total numbers of documents encountered could not always be determined precisely.

A small number of additional sources were identified through targeted Google searches using simplified keyword combinations taken from the search strings listed above. These were reviewed and included using the same criteria and process.

2.4 Selection Phase

All records identified through database searches were imported into a spreadsheet and deduplicated. Title and abstract screening was then conducted systematically, applying the inclusion and exclusion criteria to each record in turn.

The full text screening was subsequently applied to all remaining records. Grey literature sources were screened using the same criteria; given that these sources are not always structured with titles and abstracts, the full document was screened where the title matched the inclusion criteria.

2.5 Data Extraction and Charting

Relevant information was extracted from all included sources and organised thematically, forming the basis of the results presented in the following section.

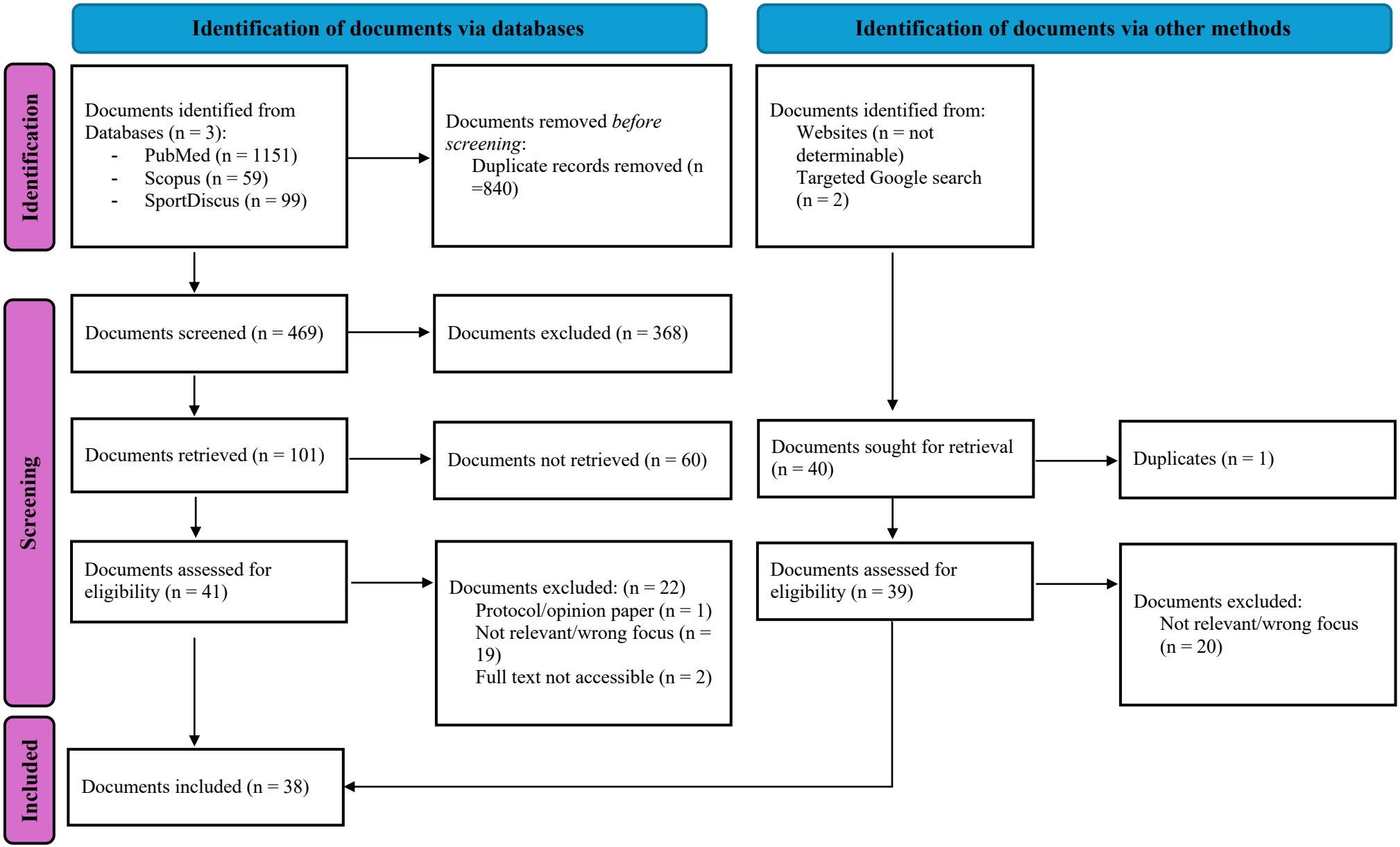

Figure 1. PRISMA 2020 flow diagram illustrating the selection process for included sources. Source: Page et al. (2021). Licensed under CC BY 4.

3 Results

The systematic search and grey literature review yielded a total of 38 included sources, organised thematically into five categories:

- Policies, Curricula and Guidelines
- Current State of Movement and Physical Development
- Early Childhood Development (ECD) Centres and Infrastructure
- Programmes and Initiatives
- Assessment and Monitoring

Sources that addressed multiple topics were assigned to the category most relevant to their primary focus.

3.1 Overview of Included Sources

A total of 38 sources were included in this scoping review, comprising 19 journal articles identified through database searches and 19 grey literature documents, including national curriculum frameworks, policy documents, government reports, programme materials and situational analyses. Sources were published between 2007 and 2025, with the majority published after 2015, suggesting growing attention to this topic in recent years. Of the 38 sources, six addressed Namibia whereas 32 focused on South Africa. No sources provided a direct comparison between the two countries. The considerable difference in the volume of available evidence between South Africa and Namibia is itself a finding of this review, pointing to an opportunity for further research and documentation in the Namibian context.

3.2 Policies, Curricula and Guidelines

Of the sources in this category, two were identified through academic database searches, with all remaining documents found through the grey literature search.

South Africa

South Africa has developed a relatively comprehensive policy and curriculum framework addressing movement and physical development in early childhood. At the broadest level, the National Integrated Early Childhood Development Policy (Republic of South Africa, 2015) provides a strategic framework for integrated ECD service delivery from birth to six years. It identifies physical activity as important in terms of motor skills forming the foundation for healthy physical development, and as one of several components of a well-functioning development programme (Republic of South Africa, 2015). The National Early Learning and Development Standards (Department of Basic Education, 2009) outline expected developmental milestones across three age groups for children from birth to four years, including motor development, and recognise that there is scope to further support South African children in meeting these developmental expectations. Physical development is addressed as

one of five developmental domains rather than a standalone focus (Department of Basic Education, 2009).

The South African National Curriculum Framework for children from birth to four (Department of Basic Education, 2015b) explicitly identifies being physically strong and active, and participating in activities that promote motor skills, as an important aspect of the key domain of Early Learning and Development Areas. It provides a country-wide "guidance for those developing programmes and working with babies, toddlers and young children from birth to age four" (Department of Basic Education, 2015b, p.1). At school entry level, the Curriculum and Assessment Policy Statement (CAPS) (Department of Basic Education, 2011) for Life Skills includes physical education as a compulsory component from Grade R onward, specifying a required weekly time allocation of two hours. The National Policy Pertaining to the Programme and Promotion Requirements of the NCS (Department of Basic Education, 2015a) provides an overview of subject requirements across grades, including the required hours per subject. Unlike the CAPS, it does not specify how the six hours allocated to Life Skills are distributed across its components (Department of Basic Education, 2015a).

A landmark development was the launch of the South African 24-Hour Movement Guidelines for Birth to Five Years in December 2018 (Draper et al., 2020a), with the development process described in detail. These guidelines integrate recommendations for physical activity, sitting time, screen time and sleep across the full day. They were developed through a transparent, evidence-based process involving a multidisciplinary consensus panel (Draper et al., 2020a) and extensive stakeholder consultation, which demonstrated strong agreement with the guidelines and how highly stakeholders regard their importance (Tomaz et al., 2020b).

Namibia

Namibia has established foundational structures for movement and physical development in early childhood. The National Curriculum for Basic Education (Ministry of Education, Arts and Culture & National Institute for Educational Development, 2016) identifies physical education as a key learning area from pre-primary level onward. The Pre-Primary Syllabus (Ministry of Education & National Institute for Educational Development, 2015) includes physical development as one of its developmental areas and specifies learning objectives and competencies related to motor development for pre-primary aged children. The development of dedicated movement guidelines for early childhood, as seen in South Africa, represents a natural next step in strengthening this framework.

3.3 Current State of Movement and Physical Development

This category comprises the largest share of included sources with 14 documents addressing the current state of movement and physical development in early childhood. Of these, 13 focus on South Africa and one addresses Namibia. The majority were identified through academic database searches, with four grey literature sources included.

South Africa

Evidence on physical activity in South African children is relatively well established, with findings varying across age groups, income settings and measurement methods. Studies that used objective accelerometry found that the majority of preschool-aged children met the physical activity guidelines, with rates ranging from 83% to almost 97% across different samples (Prioreschi & Micklesfield, 2019; Tomaz et al., 2019c; Tomaz et al., 2020a; Draper et al., 2020b). Direct observation in ECD settings found that children spent on average 28.7% of their time in physical activity, of which 22% was moderate to vigorous activity (MVPA) (Tomaz et al., 2019b). Notably, preschool children were significantly more active than Grade R children (Tomaz et al., 2019b), who spent approximately 73% of their time in sedentary behaviour (Jones et al., 2014). Children were more likely to engage in MVPA when outdoors (Tomaz et al., 2019b). Children from low-income urban and rural settings were consistently more active than those from higher-income settings (Tomaz et al., 2020a; Jones et al., 2014). Across several studies, boys were more active than girls, spending more time in moderate to high intensity physical activity and more time outdoors (Tomaz et al., 2020a; Prioreschi et al., 2017). Older children also tended to be more physically active than younger ones (Prioreschi & Micklesfield, 2019). Among infants and toddlers, 58% met the physical activity guidelines, reflecting a different pattern from that observed in older preschool children (Prioreschi & Micklesfield, 2019; Nyawose et al., 2024).

Regarding motor development, data from 2018 to 2022 indicate a shifting picture among children aged four to five (Nyawose et al., 2024), with a considerable proportion of children not yet meeting development standards (UNICEF, 2024; Giese et al., 2025; Giese et al., 2022). Data from 2022 indicate that 48.3% of children aged four to five are on track in gross motor development, while 24.4% are approaching the expected level and 27.3% are at an earlier stage of development (Giese et al., 2022). Fine motor skills represent a further area with room for growth, with under a third of children on track (Giese et al., 2022). As UNICEF (2024) draws on the same dataset, these figures are consistent across both reports. The 2024 Thrive by Five report shows comparable results, with 44% of children on track in gross motor skills and 29% on track in fine motor coordination and visual motor integration (Giese et al., 2025). Other studies report more encouraging findings. Nyawose et al. (2024) found that 88.5% of children performed at an average level, while Tomaz et al. (2019a) reported that 93% were performing at or above average. Notably, children from rural low-income backgrounds outperformed peers from other socioeconomic groups, and boys performed considerably better than girls on average (Tomaz et al., 2019a).

At the level of knowledge and awareness, a qualitative study explored maternal perceptions of physical activity in the first two years of life. The findings indicate that mothers primarily understood physical activity as an indicator of health rather than a behaviour to actively encourage. This points to a meaningful opportunity to strengthen caregiver awareness through targeted programmes and communications (Prioreschi et al., 2020).

Namibia

The current state of movement and physical activity among young children in Namibia remains an emerging area. The needs assessment of under-resourced ECD centres highlighted opportunities to strengthen both practitioner knowledge of adequate physical development support and the physical environments of ECD centres to better meet children's developmental needs (Office of the First Lady, 2017).

3.4 Early Childhood Development (ECD) Centres and Infrastructure

This category includes four sources, all of which focus on South Africa. Three were identified through grey literature searches and one through academic database searches. Sources specifically addressing ECD centre infrastructure in Namibia were not identified beyond the needs assessment (Office of the First Lady, 2017) discussed in section 3.3.

South Africa

Evidence consistently points to areas with potential for development in the physical environments and programme content of South African ECD centres. A tracking report on public expenditure and service quality in ECD centres found that physical activity for large and fine motor skills, such as free play time, was among the less frequently included components of ECD programmes (Department of Basic Education et al., 2011), suggesting that there is scope to more consistently reflect policy intentions in daily practice.

A national audit of ECD centres found that many facilities had limited equipment for free and active outdoor play, with basic items such as balls, buckets, jumping ropes and climbing structures not always available (Department of Social Development & Economic Policy Research Institute, 2014). Expanding the availability of such resources would meaningfully support children's opportunities for physical development in these settings.

A large-scale assessment of 50 Early Learning Programmes across four provinces found that gross motor skills were included in 80% and fine motor skills in 62% of programmes (Biersteker et al., 2023). Children attending programmes that actively promote gross motor skills performed better in standardised developmental assessments (Biersteker et al., 2023), underscoring the importance of intentional movement promotion for children's developmental outcomes. This finding points to the potential of strengthening the emphasis on motor skill development across a wider range of programmes.

The most detailed picture of physical play environments comes from a recent comparison of outdoor play spaces across different socioeconomic settings. ECD centres in lower socioeconomic settings often have more constrained outdoor play spaces with 7% having no outdoor space at all, and 43% featuring only traditional playground designs (Clarkson et al., 2025). In contrast, centres in higher socioeconomic settings offer a wider variety and abundance of outdoor resources (Clarkson et al., 2025). Notably, representation of any play area design or movement equipment was below 50% across all categories (Clarkson et al., 2025). This points to the value of targeted investment in physical play environments across settings as a meaningful step towards supporting children's physical development (Clarkson et al., 2025).

Namibia

ECD centre infrastructure and physical play environments in Namibia represent an area where further documentation would be valuable.

3.5 Programmes and Initiatives

Nine sources fall under this category, of which three address Namibia and six South Africa. Five sources were identified through grey literature searches including two Namibia-specific sources found through targeted Google searches, while the remaining four were retrieved from academic databases.

South Africa

Several programmes and initiatives have been developed in South Africa aimed at promoting movement and physical development in early childhood, with particular focus on supporting caregivers. These range from national dissemination campaigns to caregiver training and curriculum implementation studies.

The most systematic initiative to date has been the dissemination of the South African 24-Hour Movement Guidelines through a train-the-trainer model (Draper et al., 2021). Community-based organisations were trained to share the guidelines with caregivers and ECD practitioners, with 15 workshops held across seven provinces, reaching 281 participants (Draper et al., 2021). Findings confirm the feasibility and acceptability of this dissemination approach in low-income settings (Draper et al., 2021). Follow-up groups indicated that the guidelines were successfully shared with end-users beyond the workshops (Draper et al., 2021). A qualitative evaluation of participants' reception found consistently positive attitudes towards the guidelines, with organisation representatives and stakeholders recognising the importance of physical development for South African toddlers and children (Draper et al., 2022). Participants also noted ways in which the guidelines could complement existing ECD priorities and address areas of unmet need (Draper et al., 2022).

At the caregiver level, a training package for parents and primary caregivers provides guidance across multiple developmental domains, including physical development (Department of Social Development & UNICEF, 2008). It encourages caregivers to ensure children are physically active, play outside regularly and engage in activities such as climbing, running and walking (Department of Social Development & UNICEF, 2008). The Guidelines for Early Childhood Development Services (Department of Social Development & UNICEF, 2007) further specify minimum physical space and activity requirements for ECD centres, stating that each child must have at least 1.5 m^2 of indoor and 2 m^2 of outdoor play space. Daily programmes must additionally include physical activities for both large and small muscle development, and outdoor play equipment must be provided (Department of Social Development & UNICEF, 2007).

A study collecting data to inform future intervention strategies found that teachers welcomed guidance on how to lead activities that aimed at promoting physical activity and motor skill development (Draper et al., 2017). Both teachers and parents held positive attitudes towards young children being physically active (Draper et al., 2017). A further study examined Grade R teachers' understanding and implementation of the physical development component of the national curriculum, finding that teachers drew limited guidance from the curriculum, which was perceived as insufficiently specific and not comprehensive enough to fully support quality physical development programmes (Perry et al., 2012). Taken together, these findings suggest that while positive attitudes towards movement exist among educators and caregivers, curriculum guidance alone may benefit from further work to ensure effective implementation.

Evidence from a pre-test/post-test intervention study evaluating a Kinderkinetics programme among four to six-year-old preschool children demonstrated that a structured seven-month perceptual-motor programme significantly improved gross motor, fine motor and total motor quotients (Pienaar et al., 2011).

Namibia

In Namibia several structured resources to support the implementation of physical education in early childhood settings have been developed. This is the most concrete evidence of organised movement promotion for this age group in this country.

The Pre-Primary Teachers' Manual (Ministry of Education & National Institute for Educational Development, 2014) provides an overarching framework for what teachers and institutions should provide for children, including a timetable that allocates 30 minutes of active outdoor playtime each day. It also offers guidance for teachers on how classrooms and play spaces should be equipped and arranged, emphasises the importance of gross motor skill development and includes prepared lesson plans across developmental areas, including physical development (Ministry of Education & National Institute for Educational Development, 2014).

The KaziKidz Pre-Primary Teaching Material for Physical Education (Müller et al., 2023) is a practical toolkit developed in alignment with the Namibian pre-primary curriculum, providing teachers with prepared lesson plans, games and activities focused on physical education, health and active living. Importantly, the material includes instructions for making low-cost equipment from readily available materials, making it well suited for use in under-resourced settings (Müller et al., 2023).

The Physical Education 4 Life Guide for Educators in Namibia (Ministry of Education, Arts and Culture & Ministry of Sport, Youth and National Service, 2021), provides 21 structured PE lessons aligned with the junior primary phase syllabus, including pre-primary level. The guide was distributed to schools across all 14 regions of Namibia, representing a nationally scaled initiative to support PE implementation across diverse settings (Ministry of Education, Arts and Culture & Ministry of Sport, Youth and National Service, 2021).

Together, these three resources reflect a practical teacher-focused approach to promoting movement in Namibian early childhood and pre-primary settings, addressing both curriculum

alignment and resource constraints. Further research on their implementation, reach and effectiveness in practice would provide valuable insights into how their impact might be strengthened.

3.6 Assessment and Monitoring

This category includes only one source, identified through academic database searches. Assessment and monitoring of movement and physical development in early childhood in Namibia represent an area for future research and documentation.

South Africa

South Africa has developed a nationally standardised instrument to monitor children's developmental progress across key domains including motor development. The South African Early Learning Outcomes Measure (ELOM) (Snelling et al., 2019) is the first age-validated and population-level standardised assessment tool that can be administered cost-effectively by trained non-professionals. It assesses children across the five domains of early childhood development, including gross motor development and fine motor coordination (Snelling et al., 2019). Confirmatory Factor Analysis confirmed that the domains are internally consistent and that items make reliable distinctions between children of different ability levels without bias across language backgrounds (Snelling et al., 2019). The ELOM is designed to facilitate assessment of early learning programme efficacy and to track progress towards sustainable development goals for children entering Grade R (Snelling et al., 2019).

Namibia

The assessment or monitoring of motor development and physical activity in early childhood in Namibia is a promising area for future scholarly and practical engagement with opportunities to build on the foundations already established through curriculum frameworks and teaching resources.

4. Discussion

This chapter discusses the findings of the scoping review, situates them within the broader context of early childhood development in South Africa and Namibia, and draws implications for future research, policy and practice.

4.1 Summary of key findings

This scoping review set out to map existing evidence on movement and physical development in children from birth to school age in South Africa and Namibia. The most notable finding is the considerable difference between the two countries in terms of available evidence. Of the 38 included sources, only six focused on Namibia while 32 focused on South Africa. This distribution is itself a finding that reflects the broader differences in research capacity, policy development and institutional priority between the two countries.

South Africa has developed a relatively comprehensive framework for early childhood development that explicitly addresses movement and physical development across multiple levels. Namibia, by contrast, has established foundational structures, including national curriculum frameworks (Ministry of Education, Arts and Culture & National Institute for Educational Development, 2016), a pre-primary syllabus (Ministry of Education & National Institute for Educational Development, 2015) and practical teaching resources (Ministry of Education, Arts and Culture & Ministry of Sport, Youth and National Service, 2021; Müller et al., 2023), and is well positioned to build on these foundations in terms of policy depth. Notably, all six Namibia-specific sources were grey literature, which indicates that peer reviewed academic research on movement or physical development in early childhood in Namibia represents a meaningful avenue for future scholarly work.

4.2 Interpretation of findings

South Africa's policy ambitions are reflected in a number of landmark initiatives, including the 24-Hour Movement Guidelines for Birth to Five Years (Draper et al., 2020a), alongside investments in tools to measure developmental outcomes accurately (Snelling et al., 2019). Yet, the sources consistently indicate that translating policy into practice remains an ongoing process. The sources highlight areas with clear potential for growth, particularly regarding physical activity and motor competencies in ECD programmes (Department of Basic Education et al., 2011) and access to outdoor play spaces in low-income settings (Clarkson et al., 2025). Teachers have further noted that more hands-on implementation support for curriculum guidance would be a valuable addition (Perry et al., 2012).

Findings on motor development present a rather inconsistent picture. While some studies indicate that the majority of South African preschool children meet physical activity guidelines (Prioreschi & Micklesfield, 2019; Tomaz et al., 2019c; Tomaz et al., 2020a; Draper et al., 2020b), data from Thrive by Five Index Report (Giese et al., 2022) suggest that fewer than half

of children aged four to five are on track in gross motor development, with lower figures reported for fine motor skills. These findings, though, are not directly comparable as they measure different aspects of physical development, draw on different instruments and standards, and assess children across varying age ranges. This points to the value of greater consistency in physical activity measurement across studies, including clearer definitions and continued refinement of whether current guidelines adequately capture the complexity of motor development across different age groups, as well as the relationship between physical activity levels and motor development outcomes.

An important contextual factor is the influence of socioeconomic conditions. Children in lower-income environments have more limited access to safe outdoor play spaces (Clarkson et al., 2025), and ECD institutions in these areas often have fewer movement materials and basic play equipment available (Department of Social Development & Economic Policy Research Institute, 2014). Equally relevant is the finding that mothers in South Africa primarily interpret physical activity as a health indicator rather than a behaviour to actively encourage (Prioreschi et al., 2020), which points to an important opportunity for awareness-building through programmes, institutions and frameworks. In this regard, South Africa's 24-Hour Movement Guidelines dissemination workshops (Draper et al., 2021; Draper et al., 2022) represent a promising step towards strengthening understanding of the importance of physical activity and its long-term impact on children's health and development.

It is also worth noting that much of the available monitoring data closely follows the launch of key South African initiatives. Meaningful change in policy implementation and behaviour at a societal level takes time and it may therefore be too early to draw firm conclusions about the full impact of these initiatives on children's developmental outcomes.

Namibia's situation must be understood in its broader context. Before questions of movement and physical development can be addressed, foundational priorities such as child survival, nutrition and access to structured early care and education continue to require attention (UNICEF Namibia, n.d.). Given that a substantial proportion of children do not yet attend ECD programmes or pre-primary school (UNICEF Namibia, 2020, 1:21), supporting physical development in early childhood is closely linked to these wider systemic efforts, and progress in one area is likely to reinforce the other.

The existing foundation in Namibia is meaningful. The country has a national curriculum framework (Ministry of Education, Arts and Culture & National Institute for Educational Development, 2016) that includes physical education from pre-primary level on, a pre-primary syllabus (Ministry of Education & National Institute for Educational Development, 2015) with specific motor development objectives and two practically oriented teaching resources, KaziKidz (Müller et al., 2023) and PE 4 Life (Ministry of Education, Arts and Culture & Ministry of Sport, Youth and National Service, 2021), that provide structured movement activities for teachers in under-resourced settings and even include instructions for making physical activity equipment from readily available materials. These resources represent a strong

foundation to build on. Evidence on their implementation, reach and effectiveness would be a valuable contribution to the field.

Academic research on movement and physical development in early childhood in Namibia is an area with considerable scope for growth. Building an evidence base could make it possible to assess children's current development status, understand what contextual factors shape outcomes and evaluate whether existing resources and interventions are reaching children effectively.

4.3 Implications for Research, Policy and Practice

The findings of this review point to several directions for future work. In Namibia, foundational research on children's physical activity levels and motor development would be a valuable starting point, alongside evaluations of existing resources such as KaziKidz (Müller et al., 2023) and the PE 4 Life Guide (Ministry of Education, Arts and Culture & Ministry of Sport, Youth and National Service, 2021). At the policy level, the introduction of compulsory pre-primary education in Namibia would represent a meaningful step towards increasing access to structured early learning, strengthening the conditions for physical education and signalling that this period of development is a national priority. For South Africa, longitudinal data tracking the impact of recent policy initiatives would shed light on whether current efforts are translating into improved developmental outcomes for children.

At a practical level, both countries would benefit from investment in better equipped ECD centres and schools, as well as safe outdoor play spaces that allow children to engage in both structured physical education and free active play. Equally important are sustained investment in teacher training for physical education and caregiver awareness programmes that communicate the importance of physical activity as a behaviour to actively promote.

Programmes such as KaziKidz (Müller et al., 2023) and PE 4 Life Guide (Ministry of Education, Arts and Culture & Ministry of Sport, Youth and National Service, 2021) in Namibia and the 24-hour movement guideline dissemination workshops (Draper et al., 2021; Draper et al., 2022) in South Africa offer practical models with strong potential for broader scaling and evaluation.

4.4 Considerations Regarding the Scope of this Review

This review was conducted with care to ensure a systematic and transparent process; at the same time, certain aspects of this scope are worth noting for readers. First, the search was restricted to English language search strings, which means that relevant documents published in national languages of both countries may not have been captured, and locally produced knowledge may be underrepresented as a result. Second, given the partly unstructured nature of grey literature, some relevant documents may not have been identified, and this review does not claim to provide a complete picture of all existing programmes and policies. Third, no quality

assessment of individual sources was conducted, as this is consistent with scoping review methodology. A systematic review with critical appraisal would be a well-suited next step for building on the evidence mapped here.

5. Conclusion

This scoping review set out to answer the following question: "What evidence exists on movement and physical development in children from birth to school age in South Africa and Namibia across policies, curricula, programmes and initiatives?"

The review reveals that evidence on this topic is predominantly available for South Africa, where policy and curriculum frameworks have been developed, a considerable body of research on children's physical activity and motor skills is available, and a range of programmes and initiatives addressing physical development has been identified. For Namibia, the available evidence consists exclusively of grey literature, which is itself a noteworthy finding of this review.

Both countries have made meaningful progress in establishing structures to support early childhood development. In South Africa, policies and guidelines have been established, and there is clear scope to further strengthen their translation into practice. Motor development outcomes among young children are an area that will benefit from continued attention, and it is worth acknowledging that meaningful change at societal level takes time.

In Namibia, curriculum frameworks and practical teaching resources provide a solid base, and expanding access to ECD centres and preschool programmes would allow more children to benefit from structured support for their physical development.

Ultimately, physical activity in early childhood is foundational to children's social, cognitive and physical development (World Health Organization, 2019). This review contributes a systematic mapping of available evidence on this topic for South Africa and Namibia and highlights where further attention and investment would be most valuable.

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Appendix

Key Terms

Key Term	Synonyms and Related Terms
Guidelines	Regulation, curriculum, policy
Programmes	Initiative, project, programme, measures, actions
Physical Activity	Sport, exercise, fitness, physical education, PE
Pre-Primary	Preschool, Grade R, kindergarten, early childhood education, early childhood development, ECD
South Africa	-
Namibia	-

Search Strings

String 1: (guidelines OR guideline OR regulation OR regulations OR curriculum OR curricula OR policy OR policies) AND (programs OR program OR initiatives OR initiative OR projects OR project OR actions OR action OR measures OR measure) AND (physical activity OR sports OR sport OR exercise OR fitness OR physical education OR PE) AND (pre-primary OR preschool OR kindergarten OR early childhood education) AND South Africa

String 2: (guidelines OR guideline OR regulation OR regulations OR curriculum OR curricula OR policy OR policies) AND (programs OR program OR initiatives OR initiative OR projects OR project OR actions OR action OR measures OR measure) AND (physical activity OR sports OR sport OR exercise OR fitness OR physical education OR PE) AND (pre-primary OR preschool OR kindergarten OR early childhood education) AND Namibia

String 3: (physical activity OR sports OR sport OR exercise OR fitness OR physical education OR PE) AND (pre-primary OR preschool OR kindergarten OR early childhood education) AND (South Africa OR Namibia)

String 4: (guidelines OR guideline OR regulation OR regulations OR curriculum OR curricula OR policy OR policies) AND (physical activity OR sports OR sport OR exercise OR fitness OR physical education OR PE) AND (pre-primary OR preschool OR kindergarten OR early childhood education) AND (South Africa OR Namibia)

String 5: (programs OR program OR initiatives OR initiative OR projects OR project OR actions OR action OR measures OR measure) AND (physical activity OR sports OR sport OR exercise OR fitness OR physical education OR PE) AND (pre-primary OR preschool OR kindergarten OR early childhood education) AND (South Africa OR Namibia)

String 6: (early childhood development OR ECD) AND (movement OR motor skills OR motor development OR gross motor OR physical development OR active play OR sport OR physical

education) AND (policy OR policies OR curriculum OR curricula OR guidelines OR guideline OR framework OR programme OR program OR initiative OR initiatives) AND (South Africa OR Namibia) AND (infant OR toddler OR preschool OR pre-primary OR "under 6" OR "0-6") NOT (death OR disease OR nutrition OR malnutrition OR HIV OR mortality OR vaccine)

Academic Database Search — Number of Results per Search String

Database	**Search String**	**Results (n)**
PubMed	1	179
PubMed	2	8
PubMed	3	386
PubMed	4	254
PubMed	5	268
PubMed	6	56
SPORTDiscus	1	8
SPORTDiscus	2	1
SPORTDiscus	3	25
SPORTDiscus	4	10
SPORTDiscus	5	14
SPORTDiscus	6	1
Scopus	1	7
Scopus	2	0
Scopus	3	52
Scopus	4	17
Scopus	5	22
Scopus	6	1
Total		**1309**
Total after deduplication		**469**

PRISMA-ScR Checklist

Table. PRISMA-ScR Checklist

Section	Item	PRISMA-ScR Checklist Item
Title	1	Identify the report as a scoping review.
Abstract		
Structured summary	2	Provide a structured summary that includes (as applicable) background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.
Introduction		
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.
Methods		
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).
Summary measures	13	Not applicable for scoping reviews.
Synthesis of results	14	Describe the methods of handling and summarizing the data that were charted.
Risk of bias across studies	15	Not applicable for scoping reviews.
Additional analyses	16	Not applicable for scoping reviews.
Results		
Selection of sources of evidence	17	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.
Characteristics of sources of evidence	18	For each source of evidence, present characteristics for which data were charted and provide the citations.
Critical appraisal within sources of evidence	19	If done, present data on critical appraisal of included sources of evidence (see item 12).
Results of individual sources of evidence	20	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.
Synthesis of results	21	Summarize and/or present the charting results as they relate to the review questions and objectives.
Risk of bias across studies	22	Not applicable for scoping reviews.
Additional analyses	23	Not applicable for scoping reviews.
Discussion		
Summary of evidence	24	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.
Limitations	25	Discuss the limitations of the scoping review process.
Conclusions	26	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.
Funding	27	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.
* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.
† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).
‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.
§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy documents).

Source: Tricco et al. (2018)

Usage of Artificial Intelligence

The author acknowledges the use of Claude (Anthropic) to support phrasing and editing of all text written in this paper.

Declaration of Authorship

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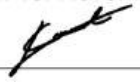
Datum: 10.06.26	Unterschrift 

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