

# Evidence synthesis

## Scoping review of children's and youth's outdoor play publications in Canada

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### Abstract

**Introduction:** Since 2015, interest in the benefits of outdoor play for physical, emotional, social and environmental health, well-being and development has been growing in Canada and elsewhere.

**Methods:** This scoping review aims to answer the question, "How, and in what context, is children's and youth's outdoor play being studied in Canada?" Included were studies of any type on outdoor play published after September 2015 in English or French by authors from Canadian institutions or assessing Canadian children and/or youth. Articles retrieved from MEDLINE, CINAHL and Scopus by March 2021 were organized according to eight priority areas: health, well-being and development; outdoor play environments; safety and outdoor play; cross-sectoral connections; equity, diversity and inclusion; professional development; Indigenous Peoples and land-based outdoor play; and COVID-19. Within each priority, study design and measurement method were tallied.

**Results:** Of the 275 articles included, the most common priority area was health, well-being and development (n = 239). The least common priority areas were COVID-19 (n = 9) and Indigenous Peoples and land-based outdoor play (n = 14). Cross-sectional studies were the most common; the least common were rapid reviews. Sample sizes varied from one parent's reflections to 999 951 data points from health databases. More studies used subjective than objective measurement methods. Across priorities, physical health was the most examined outcome, and mental/emotional development the least.

**Conclusion:** A wealth of knowledge on outdoor play in Canada has been produced since 2015. Further research is needed on the relationship between outdoor play and mental/emotional development among children and youth.

**Keywords:** *outcomes research, healthy lifestyle, well-being, child health, priorities*

### Introduction

The 2015 *Position Statement on Active Outdoor Play*<sup>1,2</sup> (Position Statement) highlighted the unequivocal benefits of outdoor play for children's physical, mental, emotional, social and environmental health, well-being and development.<sup>3,4</sup> Two systematic reviews,<sup>3,4</sup> which collectively identified 49 academic articles related to outdoor play (though these are

not exclusive to Canada or Canadian authors), investigated the evidence on the health, well-being and developmental benefits of outdoor play and informed the development of the Position Statement. These reviews, and the Position Statement, were a galvanizing force, bringing the many and diverse members of the outdoor play sector together and inspiring research, practice and policy work in Canada and abroad. For example, the Position Statement

### Highlights

- Since 2015, interest in the benefits of outdoor play for physical, emotional, social and environmental health, well-being and development has been growing in Canada and elsewhere.
- We identified 275 Canadian articles on outdoor play published since 2015.
- The most common focus was on the health, well-being and developmental benefits of outdoor play. The least common focus was on COVID-19 and Indigenous Peoples and land-based outdoor play.
- This scoping review highlights the dramatic expansion of outdoor play research in Canada and proposes areas for future research.

has been cited by more than 300 articles, used by local Ontario government to inform health policy efforts<sup>5</sup> and by the District of Saanich in a BC Supreme Court<sup>6</sup> ruling as evidence on the benefits of risk taking, helping the District defend their stance on outdoor play.

### Rationale and objectives

The *Outdoor Play in Canada: 2021 State of the Sector Report*<sup>7</sup> ("State of the Sector Report"), released in October 2021, addressed three main questions as a follow-up to the Position Statement: how has the outdoor play sector changed since the publication of the Position Statement; what is the current state of the sector; and what are the

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priorities for the sector over the next 5 years.

Addressing the first two questions involved tracing the evolution of the outdoor play movement in Canada since 2015 through the organization of conferences, launch of funding initiatives and initiation of working groups dedicated to promoting outdoor play and by conducting a scoping review of outdoor play literature published, in part, because of these efforts.

For example, the Position Statement was featured in the 2015 ParticipACTION Report Card on Physical Activity for Children.<sup>8</sup> The Report Card showed that there were little data on the outdoor play habits of Canadian children and youth. More data have since become available, though what these show is of concern: before the COVID-19 pandemic, only 21% of Canadian children and youth regularly played outdoors,<sup>9</sup> but by April 2020, outdoor play had decreased nationally<sup>10</sup> and the levels have been slow to return, even to pre-pandemic levels.<sup>11</sup> This is an alarming trend, but one that would not have been so clearly demonstrated had it not been for those initial 2015 findings and the resultant push to address this knowledge gap.

The primary aim of the scoping review was to document the efforts to build on the foundation of research on outdoor play in Canada since the publication of the Position Statement.<sup>2</sup> The electronic search conducted in spring 2021 and updated in March 2022 identified 447 publications on outdoor play in Canada, where play is defined as “voluntary engagement in activity that is fun and/or rewarding and usually driven by intrinsic motivation” and outdoor play is defined as “a form of play that takes place outdoors,” in keeping with the Play, Learn and Teach Outdoors Network (PLaTO-Net) Terminology, Taxonomy, Ontology Global Harmonization Project.<sup>12,13</sup>

Because of the staggering number of publications identified, many of which focus on play among adults, we divided the included articles into two: on children’s and youth’s outdoor play and on adult-oriented outdoor play. The scoping review presented here encompasses the literature on children’s and youth’s outdoor play and aims to answer the question, “How, and in what context, is children’s and

youth’s outdoor play being studied in Canada?”

A scoping review that focusses on adult outdoor play will also be prepared.

A secondary aim of this scoping review was to build on the third question in the State of the Sector Report,<sup>7</sup> on the outdoor play sector’s priorities for the next 5 years. To address this third question within the Report, a 63-person national cross-sectoral consultation group was brought together to identify major priorities for the outdoor play sector and associated actions via a 4-month consultation process. Common priorities were identified, refined, voted on and subsequently presented to the broader outdoor play sector in Canada for input to ensure representation. Through this process, 302 Canadian stakeholders agreed on nine major priorities. These were subsequently endorsed by 12 reviewers, colleagues who work in international outdoor play sectors.<sup>7</sup> These nine priorities aim to serve as a common vision for the outdoor play sector to thrive and succeed over the next 5 years:

- Promote the health, well-being and developmental benefits of outdoor play;
- Promote, protect, preserve and invest in outdoor play environments;
- Advocate for equity, diversity and inclusion in outdoor play;
- Ensure that outdoor play initiatives are land-based and represent the diverse cultures, languages and perspectives of Indigenous Peoples of North America;
- Research and support data collection on outdoor play;
- Reframe views on safety and outdoor play;
- Leverage engagement opportunities with the outdoors during and after COVID-19;
- Increase and improve professional development opportunities in outdoor play; and
- Expand and enable cross-sectoral connections/collaborations.

Therefore, the secondary aim of the scoping review was to categorize the included articles according to these priorities; provide guiding information on common methods of measurement and evaluation within the priorities; and determine the methodological and knowledge gaps

within each priority. By doing so, our aim was to help identify where to focus efforts within each priority, and where there is a wealth of knowledge that researchers, policy makers, educators, practitioners and outdoor play advocates can draw on to promote, protect and preserve access to play in nature and the outdoors for all.

## Methods

This scoping review followed the Preferred Reporting Items for Systematic reviews and Meta-Analysis Extension for Scoping Review (PRISMA-ScR) guidelines<sup>14</sup> (checklist available on request from the authors). We also used the Arksey and O’Malley<sup>15</sup> framework, as updated by Levac et al.<sup>16</sup> Accordingly, we completed the following six steps: (1) identification of the research question; (2) identification of relevant studies; (3) selection of eligible studies; (4) charting the data; (5) collating, summarizing and reporting of results; and (6) consulting with relevant stakeholders.

### Search strategy

We conducted an electronic search via three academic databases, Ovid MEDLINE, EBSCO Cumulative Index to Nursing & Allied Health Literature (CINAHL) and Scopus in March 2021, using two search concepts, “outdoor play” and “Canada.” Other search terms used in conjunction with the two search concepts were “free play,” “nature play,” “risky play,” “active play,” “unstructured play,” “unsupervised play,” “playground,” “school ground,” “loose parts,” “outdoor recreation,” “nature-based recreation,” “nature experience” and “outdoor activities.” These terms were selected based on key outdoor play terms identified in the PLaTO-Net Terminology, Taxonomy, Ontology Global Harmonization Project.<sup>13</sup>

KB conducted the search on 29 March 2021 and updated it on 31 March 2022.

Full search strategies for each database are shown in [Supplementary Table 1](#).

### Study inclusion criteria

We used the population, concept and context (PCC) framework<sup>17</sup> to ensure that studies selected for the review aligned with our research questions. Peer-reviewed articles published in English or French by (first or last) authors from Canadian institutions, or works that studied a Canadian population, published between September

2015 and March 2022 were included. No restrictions were placed on the type of study or article (e.g. commentaries and reviews were included). Studies were excluded if they did not measure or describe outdoor play experiences and/or literature.

The PLaTO-Net Terminology, Taxonomy, Ontology Global Harmonization Project<sup>13</sup> does not limit play to children, and our searches had no limits on participant age. However, because of the large number of articles retrieved that met our inclusion criteria (n = 447), we separated the data according to age (e.g. children/youth, < 18 years; adults, ≥18 years; or both).

### Study selection

Articles that met the inclusion criteria were downloaded and imported into Covidence (Veritas Health Innovation, Melbourne, AUS) for de-duplication. Two reviewers (LDL and KB), working independently, screened the titles and abstracts of the included articles using the PCC framework.<sup>17</sup> Inclusion depended on consensus between the two reviewers. These two reviewers developed the PCC and, before level 1 screening, engaged in a training session where each reviewer independently evaluated the same 10 articles against the inclusion criteria and met to discuss challenges and questions. During level 1 screening, these two independent reviewers met weekly to discuss conflicts in the screening process and achieve consensus.

For full-text screening (level 2), this process was repeated with a third independent reviewer, so that at least two reviewers (LDL, KB or NS) had to agree on final inclusion, resolving any conflicts through discussion to achieve consensus.

### Data extraction

Three reviewers (LDL, KB and NS), working independently, used a data extraction form developed a priori in Covidence and pilot-tested by all three to extract data from full texts. The reviewers met weekly during the extraction phase to discuss any uncertainties in ensuring standardization of the extraction protocol. In some instances, an article was reviewed by two reviewers because both were on Covidence at the same time; this served as a spot-check to ensure consistency in their methods. Consensus was achieved among all reviewers

via discussions and items were re-categorized if necessary.

The following data were extracted from each article using Covidence's extraction template: title, country, population (children/youth; < 18 years, adults; ≥18 years, or both), study design, measurement of outdoor play and outcomes associated with outdoor play such as quality of life; physical, mental/emotional health; cognitive, social and environmental health; cognitive, emotional, physical and skill development; and general well-being.

Once data were extracted, the template containing the extracted data was downloaded and expanded upon to synthesize themes related to study design and measurement of outdoor play. We organized study design into the following categories: literature review, systematic review, meta-analysis, scoping review, rapid review, commentary, randomized controlled trial (RCT), non-RCT, longitudinal, cross-sectional or mixed methods.

Measurement of outdoor play was categorized as objective or subjective. Objective measurement included use of a device (e.g. accelerometer, GPS); observations (e.g. system of observing outdoor play); and/or environmental assessment (e.g. examination of neighbourhood correlates of outdoor play). Subjective measurement included proxy report (e.g. parents reporting on their child's behaviour); self report; and/or narrative (e.g. single person retelling of an experience).

If the article was a commentary, we extracted the following themes: outdoor play as a method/facilitator of learning; outdoor play and physical or mental well-being; and/or outdoor play and climate change/ecological impacts.

Finally, we extracted themes on all but one of the nine priorities identified in the State of the Sector Report<sup>7</sup>; the research and data collection priority was not included in this extraction list because all the articles in the scoping review would naturally align with research and data collection.

### Data synthesis

We separated extracted data into two groups according to age (i.e. children/youth or adults), with articles referring to

both children/youth and adults included in both datasets. We then organized articles according to the priorities identified in the State of the Sector Report,<sup>7</sup> recognizing that many of the included articles align with more than one priority area. We counted the number of articles within each priority and the type of study design and measurement of outdoor play.

## Results

### Study selection

Our search for articles on outdoor play yielded 4327 articles. After removal of duplicates, 3736 articles underwent level 1 screening. After removal of irrelevant articles (n = 2979), 757 articles underwent level 2 screening. Of these, we excluded 310 because they did not focus on or measure outdoor play (n = 156; 50%); they were published before September 2015 (n = 77; 25%); they were not by a Canadian author or did not study a Canadian population (n = 60; 19%); they were not considered full articles (n = 12; 4%); the full-text of the article could not be located (n = 4; 1%); or they were not published in English or French (n = 1; <1%). For the full review, 447 articles were deemed relevant; 275 articles focussed on children/youth outdoor play and were included in this scoping review.

See Figure 1 for a visual representation of the screening process.

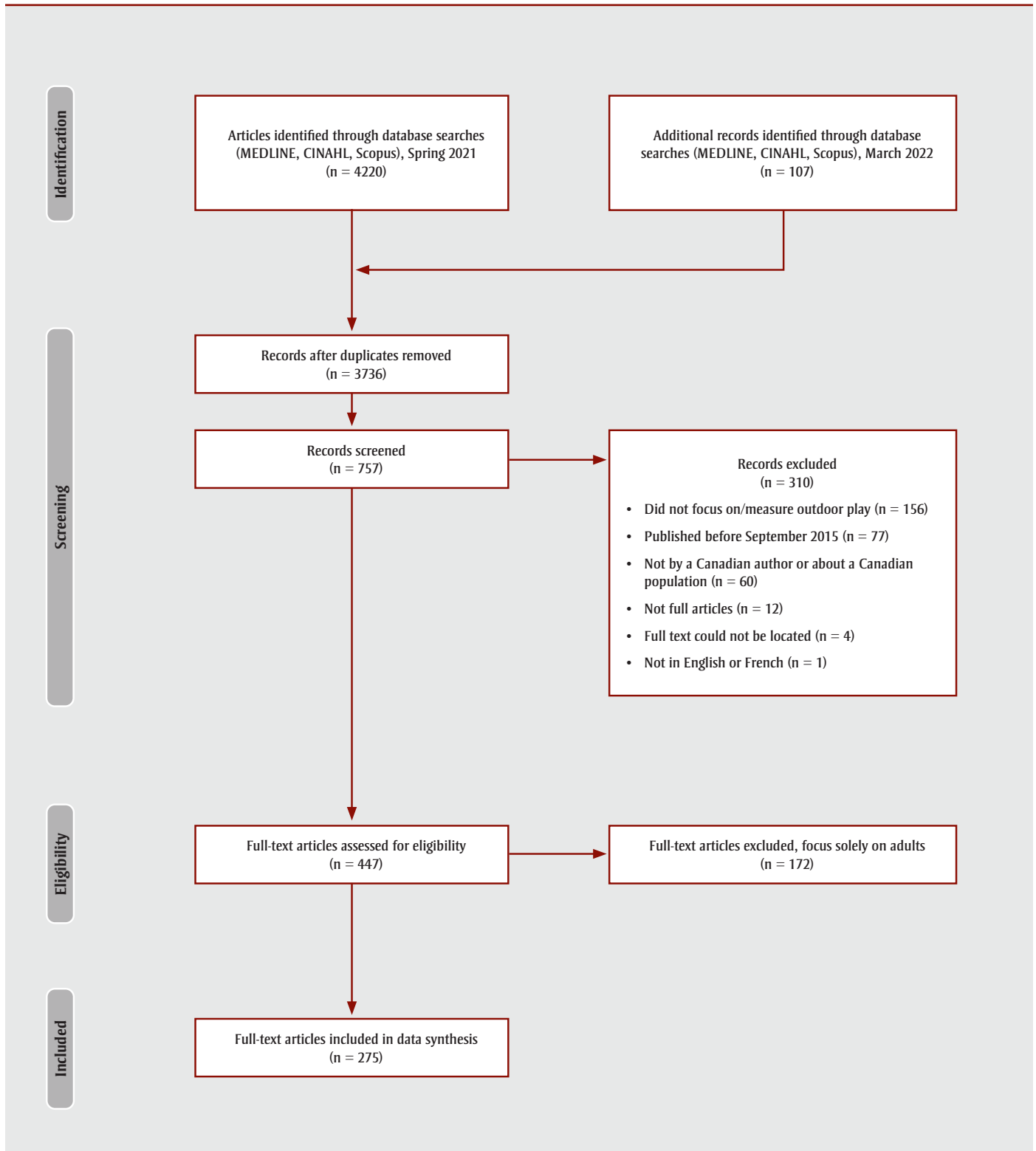
### Study characteristics

An overview of the characteristics of each included study is available in [Supplementary Table 2](#). The distribution of included articles by year of publication is shown in Figure 2.

In line with the inclusion criteria, all studies focussed on children and youth younger than 18 years. More articles focussed on children (delineated as 5–11 years old or no age range specified for children; 183/275) than on younger ages (< 5 years; 73/275) and adolescence (12–17 years; 117/275), with considerable overlap (118/275) in the age ranges examined.

Almost three-quarters of the articles (74%; 204/275) examined both males and females, 24% (65/275) did not specify sex/gender and only a fraction looked exclusively at either males (1%; 3/275) or females (1%; 3/275).

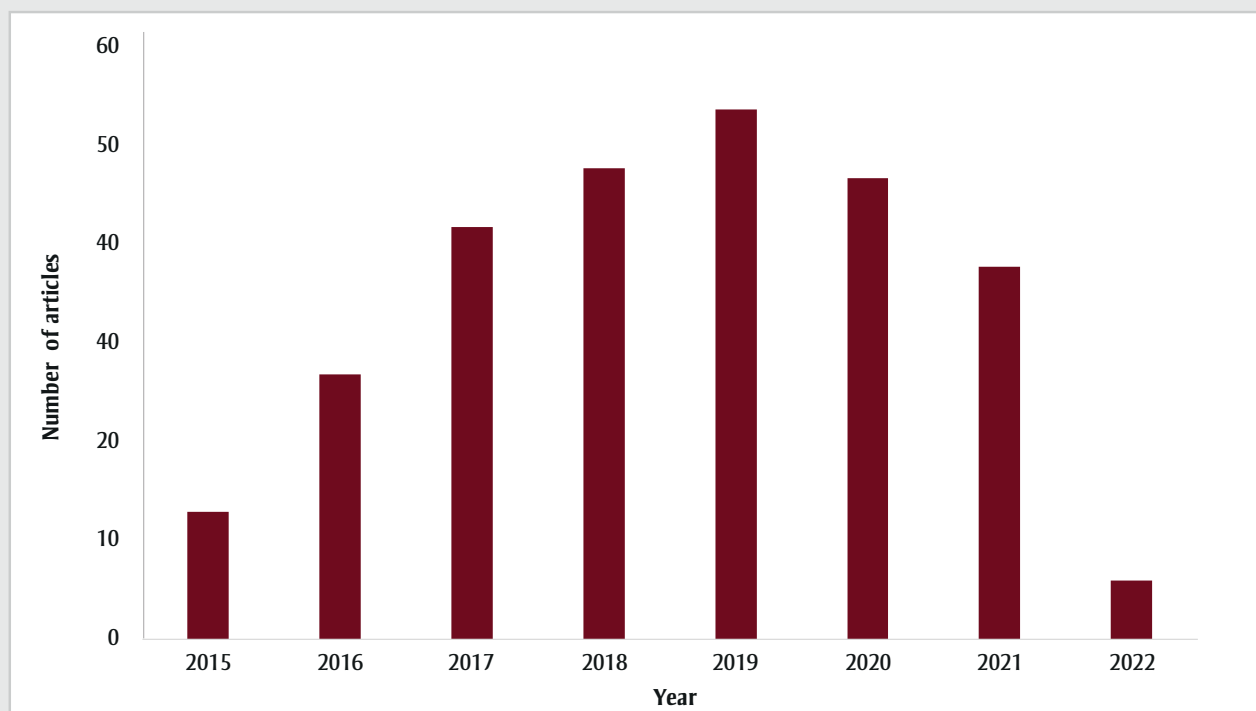
**FIGURE 1**  
**PRISMA-ScR flow diagram<sup>a</sup> of the identification, screening, eligibility and inclusion of studies in this scoping review**



**Abbreviation:** PRISMA-ScR, Preferred Reporting Items for Systematic Reviews and Meta-Analysis Extension for Scoping Review.

<sup>a</sup> Based on Moher et al., 2009.<sup>18</sup>

**FIGURE 2**  
Distribution of articles included in the scoping review by year of publication (2015–2022)



**Note:** Each bar represents the number of included articles in the review according to year of publication. Article counts for 2015 and 2022 are based on partial years; counts in 2015 were from September to December and in 2022 from January to March.

In line with the inclusion criteria, all the articles were written by authors from Canadian institutions or examined a Canadian population. Seven studies covered Canadian and international participants,<sup>19-25</sup> and a Canadian and American research team analyzed data from international participants in one study.<sup>26</sup> Sample sizes varied widely, depending on the study design, from one parent's observations of their son playing outdoors<sup>27</sup> to 999 951 data points on unintentional injuries among children and youth collected from linked health and administrative databases.<sup>28</sup>

### Outdoor play themes

We categorized the included articles according to one or more of the State of the Sector Report<sup>7</sup> priorities, in rank order: health, well-being and development (n = 239); outdoor play environments (n = 155); safety and outdoor play (n = 85); cross-sectoral connections (n = 66); equity, diversity and inclusion (n = 48); professional development (n = 41); Indigenous Peoples and land-based outdoor play (n = 14); and COVID-19 (n = 9).

Figure 3 shows the distribution of included articles according to these priority themes and year of publication.

### Outdoor play study design

Cross-sectional studies were the most common study design across the State of the Sector Report<sup>7</sup> priorities except for studies in the Indigenous Peoples and land-based outdoor play priority, for which the most common study design was mixed methods.

The least common study design was rapid review. Rapid review tied as the least common design in the following priorities: safety and outdoor play (no rapid reviews, meta-analyses or scoping reviews); cross-sectoral connections (no rapid reviews or scoping reviews); equity, diversity and inclusion (no rapid reviews, longitudinal studies or RCTs); professional development (no rapid reviews, meta-analyses or scoping reviews); Indigenous Peoples and land-based outdoor play (no rapid reviews, longitudinal studies, meta-analyses, RCTs or scoping reviews); and COVID-19 (no rapid reviews, literature reviews, longitudinal studies, meta-analyses, mixed methods,

non-RCTs, RCTs, scoping reviews or systematic reviews) (see Table 1 and Figure 4).

### Measurement of outdoor play

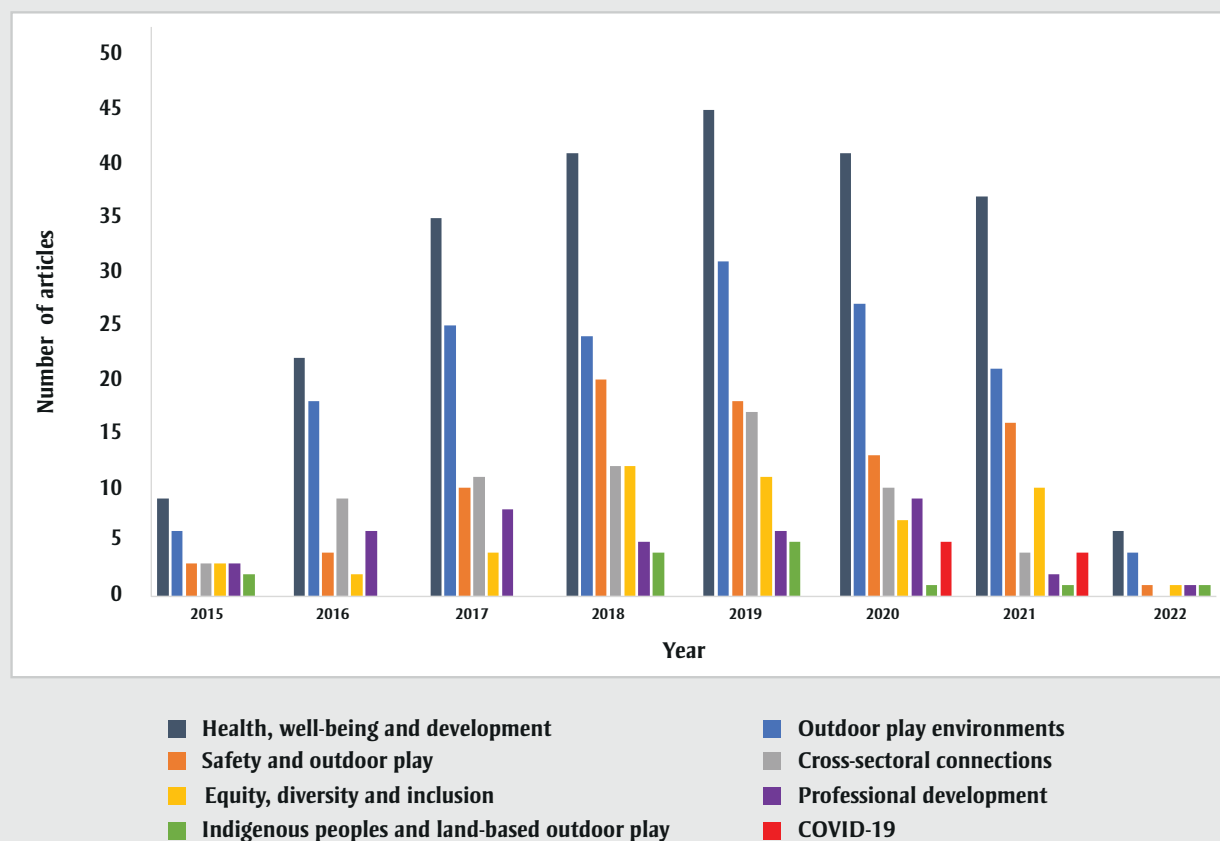
Overall, more studies used subjective than objective measures of outdoor play across the State of the Sector Report<sup>7</sup> priorities (see Table 2).

No subjective measure was consistently used more than others across priorities. Narrative measures were used less than others, with several exceptions. For instance, across the cross-sectoral connections and professional development priorities, self report was the least used subjective measure; across the priorities on equity, diversity and inclusion and Indigenous Peoples and land-based outdoor play, proxy report was the least used subjective measure.

The most used objective measure across priorities were device-based measures, with four exceptions. Within the safety and outdoor play priority, environmental assessment was the most used objective method of measurement; within the

FIGURE 3

Distribution of articles in this scoping review aligned with the State of the Sector Report<sup>a</sup> priority themes, by year of publication (2015–2022)



Note: Many articles aligned with more than one priority, and articles published in a given year may count towards more than one bar.

<sup>a</sup> Outdoor Play in Canada: 2021 State of the Sector Report.<sup>7</sup>

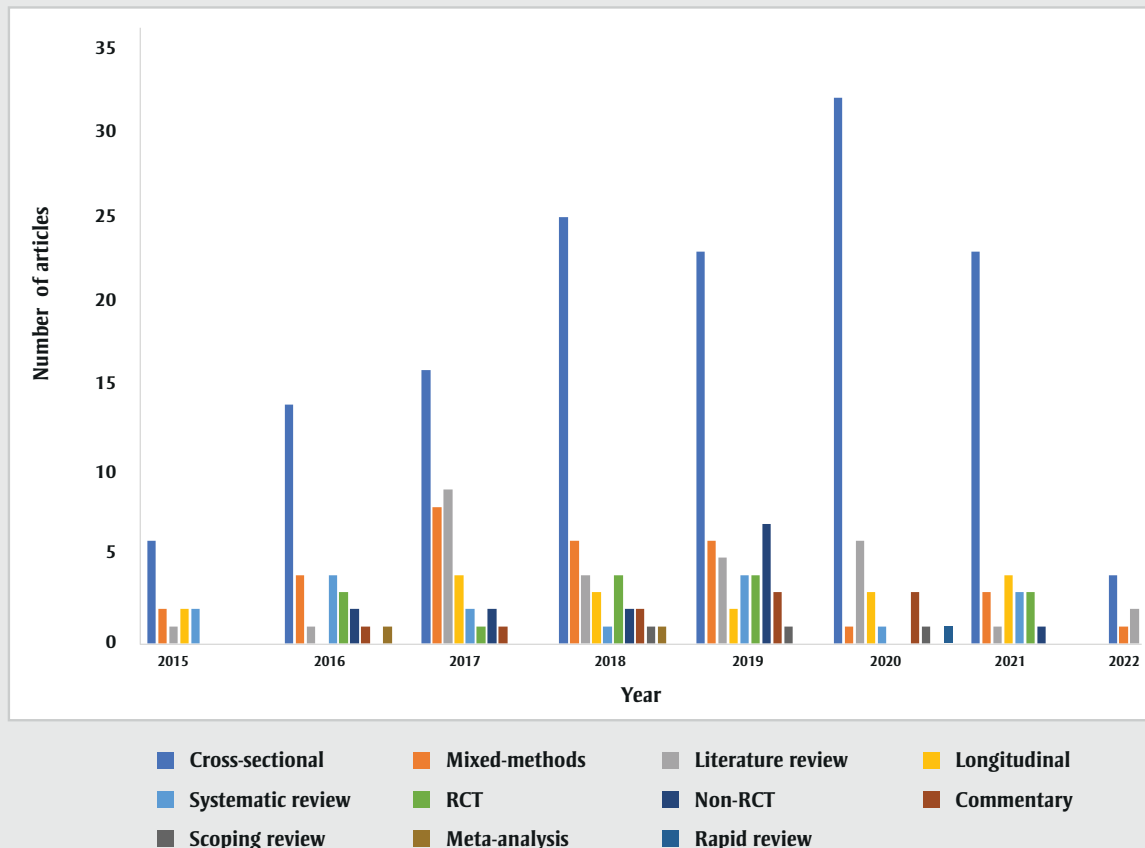
TABLE 1  
Articles organized according to the State of the Sector Report<sup>a</sup> priorities, by study design (n = 275)

Study design	Priorities, % (n)							
	Health, well-being and development (n = 239)	Outdoor play environments (n = 155)	Safety and outdoor play (n = 85)	Cross-sectoral connections (n = 66)	Equity, diversity and inclusion (n = 49)	Professional development (n = 41)	Indigenous Peoples and land-based outdoor play (n = 14)	COVID-19 (n = 9)
Commentary	3.3 (8)	3.9 (6)	2.4 (2)	4.5 (3)	2.0 (1)	4.9 (2)	14.3 (2)	11.1 (1)
Cross-sectional study	51.5 (123)	49.0 (76)	60.0 (51)	39.4 (26)	59.2 (29)	34.1 (14)	21.4 (3)	100.0 (9)
Literature review	9.6 (23)	12.3 (19)	9.4 (8)	10.6 (7)	14.3 (7)	9.8 (4)	21.4 (3)	0
Longitudinal study	7.5 (18)	7.7 (12)	5.9 (5)	4.5 (3)	0	4.9 (2)	0	0
Meta-analysis	0.8 (2)	0.6 (1)	0	1.5 (1)	2.0 (1)	0	0	0
Mixed methods	10.9 (26)	13.5 (21)	10.6 (9)	18.2 (12)	10.2 (5)	14.6 (6)	35.7 (5)	0
Non-RCT intervention	5.4 (13)	5.2 (8)	1.2 (1)	10.6 (7)	4.1 (2)	9.8 (4)	7.1 (1)	0
RCT	5.9 (14)	3.9 (6)	4.7 (4)	12.1 (8)	0	17.1 (7)	0	0
Rapid review	0.4 (1)	0	0	0	0	0	0	0
Scoping review	1.7 (4)	0.6 (1)	0	0	4.1 (2)	0	0	0
Systematic review	6.7 (16)	6.5 (10)	5.9 (5)	3.0 (2)	6.1 (3)	7.3 (3)	7.1 (1)	0

Abbreviation: RCT, randomized controlled trial.

<sup>a</sup> Outdoor Play in Canada: 2021 State of the Sector Report.<sup>7</sup>

**FIGURE 4**  
Distribution of articles included in this scoping review aligned with the State of the Sector Report<sup>a</sup> priority themes, categorized by study design and year of publication (2015–2022)



**Abbreviation:** RCT, randomized controlled trial.

**Note:** As some articles were categorized according to more than one study design they may count towards more than one bar in a given year.

<sup>a</sup> *Outdoor Play in Canada: 2021 State of the Sector Report.*<sup>7</sup>

**TABLE 2**  
Articles organized according to the State of the Sector Report<sup>a</sup> priorities, by measurement of outdoor play (n = 275)

Measurement of outdoor play	Priorities, % (n)							
	Health, well-being and development (n = 239)	Outdoor play environments (n = 155)	Safety and outdoor play (n=85)	Cross-sectoral connections (n = 66)	Equity, diversity and inclusion (n = 49)	Professional development (n = 41)	Indigenous Peoples and land-based outdoor play (n = 14)	COVID-19 (n = 9)
<b>Objective measures</b>								
Device	17.6 (42)	18.1 (28)	11.8 (10)	16.7 (11)	10.2 (5)	24.4 (10)	0	0
Environmental assessment	5.9 (14)	12.3 (19)	12.9 (11)	6.1 (4)	6.1 (3)	7.3 (3)	7.1 (1)	0
Observation	13.4 (32)	12.3 (19)	5.9 (5)	9.1 (6)	12.2 (6)	7.3 (3)	7.1 (1)	0
<b>Subjective measures</b>								
Narrative	25.5 (61)	27.7 (43)	34.1 (29)	39.4 (26)	32.7 (16)	36.6 (15)	50.0 (7)	22.2 (2)
Proxy report	34.7 (83)	33.5 (52)	48.2 (41)	36.4 (24)	30.6 (15)	43.9 (18)	14.3 (2)	88.9 (8)
Self report	43.1 (103)	40.0 (62)	35.3 (30)	34.8 (23)	53.1 (26)	24.4 (10)	28.6 (4)	44.4 (4)

<sup>a</sup> *Outdoor Play in Canada: 2021 State of the Sector Report.*<sup>7</sup>

equity, diversity and inclusion priority, observation was the most used; within the Indigenous Peoples and land-based outdoor play priority, environmental assessment and observation were the most used; and within the COVID-19 priority, no objective methods of measurement were used.

Environmental assessments were the least used objective method of measurement, though they tied as the least used method with observation within the outdoor play environments, professional development, and Indigenous Peoples and land-based play priorities. Observation was the least used objective method of measurement within the safety and outdoor play priority.

### Commentary themes

Across priorities, outdoor play as a method/facilitator of learning, and outdoor play and physical and/or mental well-being were consistently more common than the theme outdoor play and climate change/ecological impact (see Table 3).

### Outcomes

Overall, physical health was the most common outcome across the State of the Sector Report<sup>7</sup> priorities, with some exceptions. For the outdoor play environments priority, physical health tied with environmental health as the most common outcome. For the equity, diversity and inclusion and Indigenous Peoples and land-based outdoor play priorities, social health was the most common outcome (see Table 4).

The least common outcome across priorities was mental/emotional development, with some exceptions. For the safety and outdoor play priority, mental/emotional development and quality of life were the least common outcomes. For the cross-sectoral connections and Indigenous Peoples and land-based outdoor play priorities, quality of life was the least common outcome. For the COVID-19 priority, no outcomes were recorded on cognitive development, cognitive health, mental/emotional development, physical development, quality of life and skills development.

## Discussion

The number of publications on outdoor play in Canada increased considerably since the publication of the *Position Statement on Active Outdoor Play*<sup>1,2</sup> in 2015. These articles vary widely in terms of type of publication and sample size. Physical health was the most commonly measured outcome of children/youth's outdoor play and mental/emotional development the least. Of the State of the Sector Report<sup>7</sup> priorities, the most common focus was health, well-being and developmental benefits of outdoor play, and Indigenous People and land-based outdoor play was among the least common. These observations are indicative of the efforts and focus of outdoor play research over the past 6 years and show where major gaps remain.

Many of the reviews identified in this scoping review<sup>29-42</sup> focussed primarily on physical health outcomes. Several<sup>30-36,40</sup> also explored the social and environmental health benefits of outdoor play for children and youth; this is encouraging given

the importance of building a connection to the land at a young age for fostering lifelong environmental stewardship and promoting action to mitigate climate change.<sup>43,44</sup>

Given the relative novelty of outdoor play research in Canada, it is also not surprising that cross-sectional studies were the most common study design as these studies are a crucial first step in understanding the state of outdoor play across Canada. More than half of the included studies had sample sizes greater than 100 individuals, and of these, more than half had sample sizes greater than 1000 individuals (see [Supplementary Table 2](#)). This is encouraging considering criticism that has been levelled at the broader field of outdoor play research that it lacks sufficient sampling.<sup>45</sup>

Another methodological criticism of outdoor play research is the lack of rigorous study design,<sup>45</sup> such as RCTs. Such studies are needed to validate the many correlational observations on outdoor play and health and development. Although this scoping review identified far fewer RCTs than other study designs, we did identify RCTs in most priority areas, which is encouraging. Understandably, there were no RCTs on the priority themes of COVID-19 or equity, diversity and inclusion because of ethical constraints. There were also no RCTs on the priority theme of Indigenous Peoples and land-based outdoor play; here, the most common study design was mixed methods, which is considered to be the most culturally appropriate method for conducting research related

**TABLE 3**  
Articles organized according to the State of the Sector Report<sup>a</sup> priorities, by commentary theme (n = 275)

Commentary themes	Priorities, % (n)							
	Health, well-being and development (n = 239)	Outdoor play environments (n = 155)	Safety and outdoor play (n = 85)	Cross-sectoral connections (n = 66)	Equity, diversity and inclusion (n = 49)	Professional development (n = 41)	Indigenous Peoples and land-based outdoor play (n = 14)	COVID-19 (n = 9)
Outdoor play and climate change/ecological impacts	1.3 (3)	1.9 (3)	0	1.5 (1)	0	0	0	0
Outdoor play as a method/facilitator of learning	3.3 (8)	5.2 (8)	4.7 (4)	3.0 (2)	2.0 (1)	2.4 (1)	14.3 (2)	0
Outdoor play and physical and/or mental well-being	5.9 (14)	6.5 (10)	3.5 (3)	4.5 (3)	2.0 (1)	2.4 (1)	7.1 (1)	0

<sup>a</sup> Outdoor Play in Canada: 2021 State of the Sector Report.<sup>7</sup>



**TABLE 4**  
Articles organized according to the State of the Sector Report<sup>a</sup> priorities, by outcome (n = 275)

Outcome	Priorities, % (n)							
	Health, well-being and development (n = 239)	Outdoor play environments (n = 155)	Safety and outdoor play (n = 85)	Cross-sectoral connections (n = 66)	Equity, diversity and inclusion (n = 49)	Professional development (n = 41)	Indigenous Peoples and land-based outdoor play (n = 14)	COVID-19 (n = 9)
Cognitive development	13.0 (31)	15.5 (24)	12.9 (11)	16.7 (11)	10.2 (5)	17.1 (7)	21.4 (3)	0
Cognitive health	6.7 (16)	4.5 (7)	4.7 (4)	7.6 (5)	6.1 (3)	7.3 (3)	14.3 (2)	0
Environmental health	29.3 (70)	52.3 (81)	36.5 (31)	30.3 (20)	30.6 (15)	31.7 (13)	35.7 (5)	22.2 (2)
General well-being	15.9 (38)	16.1 (25)	12.9 (11)	24.2 (16)	28.6 (14)	19.5 (8)	35.7 (5)	11.1 (1)
Mental/emotional development	2.9 (7)	1.3 (2)	2.4 (2)	7.6 (5)	2.0 (1)	4.9 (2)	21.4 (3)	0
Mental/emotional health	24.3 (58)	18.7 (29)	9.4 (8)	21.2 (14)	30.6 (15)	9.8 (4)	35.7 (5)	11.1 (1)
Physical development	7.1 (17)	7.7 (12)	9.4 (8)	7.6 (5)	6.1 (3)	14.6 (6)	14.3 (2)	0
Physical health	58.2 (139)	52.3 (81)	68.2 (58)	51.5 (34)	46.9 (23)	41.5 (17)	35.7 (5)	77.8 (7)
Quality of life	3.8 (9)	4.5 (7)	2.4 (2)	6.1 (4)	6.1 (3)	7.3 (3)	7.1 (1)	0
Skills development	13.0 (31)	14.8 (23)	11.8 (10)	19.7 (13)	16.3 (8)	39.0 (16)	21.4 (3)	0
Social health	39.3 (94)	36.1 (56)	35.3 (30)	37.9 (25)	55.1 (27)	19.5 (8)	64.3 (9)	22.2 (2)

<sup>a</sup> *Outdoor Play in Canada: 2021 State of the Sector Report.*<sup>7</sup>

to, and in conjunction with, Indigenous Peoples.<sup>46,47</sup>

The wide variety of tools used to measure outdoor play across studies highlights the complexity of and challenges in measuring outdoor play.<sup>48,49</sup> While device-based measures were the most commonly used objective method of measurement of outdoor play, many studies also used subjective methods.<sup>48,50-69</sup> Combining both objective and subjective methods may allow for capturing more rich data on the multidimensional components of outdoor play, including the experiences, sensations, emotion, context and physicality of outdoor play behaviour.<sup>70</sup> However, the diversity of both objective and subjective methods used in the field poses a challenge when attempting to compare research studies, which highlights the need to establish broad consensus and standardization of measurement using valid and reliable tools—a need that the State of the Sector Report<sup>7</sup> recognized as a central action item for advancing research and data collection in the field.

### Strengths and limitations

Major strengths of this scoping review include the robustness of the scoping review process and output and our adherence to PRISMA-ScR guidelines<sup>14</sup> and the Arksey and O'Malley<sup>15</sup> framework.

Although we omitted including any manuscripts not published in English or French, which would be a limitation, only one study was excluded based on this criterion. Given that the intent of this scoping review was to identify articles published by authors from Canadian institutions or works that studied a Canadian population, this does limit the generalizability to other countries.

Another major strength of this review was the direct link to the State of the Sector Report<sup>7</sup> priorities; in linking to the priorities, this review—and more specifically, [Supplementary Table 2](#), which lists the characteristics of each included outdoor play study and their alignment with the State of the Sector priorities—may serve as a practical resource and evidence base for researchers, policy makers, educators, practitioners, outdoor play advocates and others seeking to address the State of the Sector Report<sup>7</sup> priorities and affiliated actions.

### Future directions

Our findings highlight several gaps in knowledge in the outdoor play sector that are important areas for future research. Few articles were available on Indigenous Peoples and land-based outdoor play. Supporting knowledge generation with Indigenous Peoples and promoting learning about Indigenous land-based outdoor play may provide an opportunity to build relationships of trust between Indigenous

and non-Indigenous peoples in Canada and move towards reconciliation, as outlined in the *Truth and Reconciliation Commission of Canada: Calls to Action.*<sup>71</sup> The State of the Sector Report<sup>7</sup> described this as a major priority, and given the central importance and intertwined nature of land for outdoor play, one that is embedded in all other priority areas.

Another major gap was the lack of outcomes to do with mental and emotional development. Given the concerns about the mental health of children and youth as a result of the COVID-19 pandemic,<sup>72</sup> and the parallel push to encourage children to go outdoors for the physical and mental benefits<sup>73,74</sup> and improved air circulation,<sup>75</sup> investing more resources into understanding and exploring the benefits of outdoor play on mental and emotional development is warranted.

Finally, after the launch of the State of the Sector Report<sup>7</sup> at the Breath of Fresh Air Outdoor Play Summit in October 2021,<sup>76</sup> several stakeholders expressed the need to establish a base of knowledge on equity, diversity and inclusion efforts in the field of outdoor play. This scoping review identified 46 articles examining this priority. The articles identified here (see [Supplementary Table 2](#)) may serve to inform those seeking best practices as well as information on successful achievements and the remaining hurdles in advancing

equity, diversity and inclusion in this sector.

## Conclusion

In this scoping review our aim was to answer the question, “How, and in what context, is children’s and youth’s outdoor play being studied in Canada?” We identified 275 articles published since 2015, with the methods of measurement varying widely and often involving multiple tools and types. Identified articles spanned all priority areas of the *Outdoor Play in Canada: 2021 State of the Sector Report*,<sup>7</sup> with the greatest research effort on the health, well-being and developmental benefits of outdoor play and the least on COVID-19 (which is unsurprising given the relative recency of the start of the pandemic) and on Indigenous Peoples and land-based outdoor play. This scoping review aimed to highlight the growing foundation of knowledge produced in Canada since the release of the *Position Statement on Outdoor Play in 2015*<sup>1</sup> and proposes several areas where further research is needed.

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## Conflict of interest

The authors have no conflicts of interest to report.

## Authors’ contributions and statement

LDL, KB and MST conceptualized the scoping review. LDL, KB and NS conducted the data curation, formal analysis and investigation. LDL and KB developed the methodology.

LDL wrote the original draft. LDL, KB, NS and MST reviewed and edited the draft.

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