ENCYCLOPEDIA
on Early Childhood
Development



# Designing Cities for Outdoor Play

[1]Tim Gill, BA, MA, [2] Emily Gemmell, MPH

[1]Independent Researcher, United Kingdom, [2]University of British Columbia, Canada

September 2024, Éd. rév.

## Introduction and Subject

Children's right to play is enshrined in international conventions.[1] Moreover, the importance of outdoor play for children's health and well-being is well established.[2-5] Yet around the world, opportunities for outdoor play are declining.[6]

This paper reviews evidence on the relationship between children's outdoor play and urban planning and design. It focuses on 'neighbourhood built environment attributes'[7] such as yards, housing typologies, streets and public open spaces, and how these are arranged in residential neighbourhoods, rather than just playgrounds (the most obvious built environment intervention).

This review does not examine design features within play spaces (e.g., landscaping, play equipment) as this topic is covered elsewhere.[8] It also does not examine toxic or hazardous environmental features. Finally, it does not examine social, cultural and economic factors (which may have a greater influence on children's outdoor play experiences than built environment factors[7]).

## Problems

Limited outdoor play opportunities have health and well-being consequences for children.[9–12] Families, communities and wider society also have much to lose.13,14 Playable public spaces provide important social, health-related and environmental co-benefits for all ages.[15] What is more, outdoor play is linked to greater environmental awareness and connections with nature,[16] while limited outdoor play experiences may undermine children's concern for the wider environment, and lead to lower levels of engagement with nature and community.[17,18]

Increasing evidence for the importance of outdoor play to child health and wellbeing has prompted incorporation of child-friendly design into some official city plans.[19,20] However, in most cities, planning and design decisions continue to be made with limited consideration of their impacts on children.[21–23] The challenges are greater in low and middle income country contexts due to rapid, often unplanned growth.[24,25]

## Research Context

The evidence base for neighbourhood-built environment influences on outdoor play, though increasing, remains relatively slim. Recent systematic reviews found 61 relevant quantitative studies, 30 qualitative and 6 mixed methods studies.[7,26–28] However, most quantitative studies analyzed data from a single time point, limiting interpretation to correlational, rather than causal effects; and almost all were observational, making neighbourhood effects difficult to distinguish from other determinants of behaviour. Studies are also highly heterogeneous, including a diverse set of interventions, population groups, urban contexts, and outcome measures. Outcome data are often parent reported, rather than objectively measured, presenting a potential risk of bias. Many studies focus on physical activity, rather than on outdoor play (though physical activity may serve as a reasonable proxy for outdoor play in children).[29] Despite these challenges, increased attention has advanced understanding of this complex topic, and qualitative and mixed methods evidence provide contextualized data that help to explain diverging results across settings and groups.

## Key Research Questions

The central question for research is how the planning and design of neighbourhood housing, streets and public spaces shape children's play opportunities. Given the growth of cities worldwide, one priority for research should be informing the master planning of new residential

developments. Economic, cultural and geographical contexts need to be explored, as well as issues for children and families of different ages, abilities and backgrounds, and for caregivers with infants and small children, who may have distinct challenges and concerns.

Planning and design factors that could be studied include:

- Neighbourhood population density;
- Size, distribution and accessibility of parks, playgrounds and other public open spaces;
- Proximity and ease of access to local services and facilities including schools, childcare, shopping and health services;
- Housing densities, typologies and tenure patterns;
- Access to private and semi-private outdoor space;
- The relationship between housing and the surrounding public realm;
- Design and layout of walking and cycling paths and networks;
- Traffic flows and speeds;
- Street grid patterns;
- Street designs, including traffic calming and other street features;
- Detailed design features of public open spaces.

**Recent Research Results**

Low traffic volumes, fewer intersections, neighbourhood greenness and access to formal and informal space for play are all linked to greater levels of outdoor play. Sidewalks, cycling paths, and pedestrian amenities have also been associated with outdoor play.[7,26,28] More limited evidence suggests that lower residential density, living in rented/public housing, not living in an apartment and higher physical disorder are linked with greater outdoor play.[7,26]

Three recent reviews found overall positive links between public open space and outdoor play, [26,28,30] while one reported no relationship.[7] Proximity, route and space characteristics and social context influence use of public space for play, and the importance of public space may be greater in high vs. low residential density areas.[26] One noteworthy study of newly-built English housing developments suggests that direct, traffic-free access from homes to green spaces, good

oversight of outdoor space and good walking networks are associated with more people, including children playing, in public open space.[31]

**Research Gaps**

The empirical research literature is not only heterogeneous; it also shows significant gaps. As already noted, few studies use robust intervention methodologies, limiting the scope for making claims of cause and effect. To understand the complex interactions between social and built environments influencing outdoor play, integration of quantitative and qualitative evidence is needed.

The interactions between gender, housing tenure, socio-economic or ethnicity/culture on the one hand, and built environment features that influence outdoor play on the other, has been explored in a few recent studies,[26] however, further research is needed.

Only a handful of studies included in recent literature reviews encompass children under three.[26] Likewise, more research is needed on low and middle income country contexts[7,26] where, globally, urban child populations are set to grow the most.[32]

Research could help to explore long-term trends. Studies in several countries show generational declines in children's independent mobility and 'roaming range', which may be influenced by city design[33] and is linked to outdoor play.[7] Levels of childhood physical activity may influence activity patterns later in life,[34,35] and children's engagement in outdoor play is influenced by parental factors.[28] This raises the prospect of spiralling declines in outdoor play as adults with limited outdoor play experiences become parents.

Finally, as children's outdoor play has diminished, engagement in virtual worlds has expanded, with potentially negative consequences to health and development.[36,37] Studies are needed to explore the rapidly growing role of technology on children's lives, and how these changes might interact with city design to influence outdoor play.

**Conclusions**

Given the limitations of the literature, the conclusions offered here are contingent. However, empirical research suggests that residential built environment features do have an impact on outdoor play. The most robust findings indicate that play-friendly neighbourhoods are green, provide safe and pleasant routes for active travel to everyday destinations, facilitate social

connections, and are not dominated by vehicle traffic.[7,26,28,38] Hence measures that reduce traffic flows within neighbourhoods are likely to be effective in increasing levels of outdoor play. Nearby spaces for play (e.g., gardens, yards, courtyards, low or no-traffic streets, vacant land) are likely to support outdoor play, especially where unmediated, traffic-free access to these spaces is possible. In addition, safe and pleasant walking and cycling routes may also support outdoor play.[26,28,30] Quantitative and qualitative results across contexts indicate that formal or informal play space, close to home, low-traffic neighbourhoods, other children to play with and natural environments support outdoor play across diverse urban settings.[7,26,28]

**Implications for Parents, Services and Policy**

Parents have long valued private green space for outdoor play, often due to traffic and social safety concerns.[39] However, recent research with children indicates that they desire access to and interaction with local spaces and people.[26] Without other children to play with, even the perfect physical space may quickly become boring, and children's wish for interaction may make online activities more compelling.[39,40] Decades of prioritizing adult concerns have resulted in urban environments that are often unsafe or uninspiring for outdoor play. Meaningful engagement with children is essential to inform urban design that motivates them to move, connect and play. Compact, green urban neighbourhoods, street layouts that reduce traffic speeds and volumes, and public realm features that encourage social encounters with friends and peers, between caregivers, and across generations,  may align more closely with children's views of playability.[7,26]

The key levers for change are at the municipal level, where decisions about urban planning and design typically reside. Some broad play-friendly principles, such as the need to tame vehicle traffic in residential areas, are likely to apply in all cities.

Policy decisions about transport, land uses, housing design, streets, schools and services are intimately linked, highlighting the need for cross-disciplinary work.[41] 'Smart city' initiatives may allow policy makers to better explore the impact of their planning and design decisions on children.[43] The creation of a strategic municipal focus, in the form of a well-placed official with an explicit child-friendly planning brief, may be a key step.[42]

Ultimately children's entitlement to space and time for outdoor play is a matter of values, not just evidence. It is one example of what has been called spatial justice, or "the fair and equitable

distribution in space of socially valued resources and the opportunities to use them".[44]

**References**


1. United Nations General Assembly. *The UN Convention on the Rights of the Child*. Vol 23. United Nations Human Rights Office of the High Commissioner; 1989:99-101. doi:10.1111/j.1467-9515.1989.tb00500.x
2. Yogman M, Garner A, Hutchinson J, Hirsh-Pasek K, Golinkoff RM; Committee on Psychosocial Aspects of Child and Family Health. The power of play: a pediatric role in enhancing development in young children. *Pediatrics*. 2018;142(3):e20182058. doi:10.1542/peds.2018-2058
3. Tremblay MS, Gray C, Babcock S, et al. Position statement on active outdoor play. *International Journal of Environmental Research and Public Health*. 2015;12(6):6475-6505. doi:10.3390/ijerph120606475
4. Carson V, Boyd M. Active Outdoor Play. In: Tremblay RE, Boivin M, Peters RDeV, eds. Brussoni M, topic ed. *Encyclopedia on Early Childhood Development* [online]. https://www.child-encyclopedia.com/outdoor-play/according-experts/active-outdoor-play· Updated: August 2024. Accessed September 25, 2024.
5. Wyver S. Outdoor Play and Cognitive Development. In: Waller T, Ärlemalm-Hagsér E, Sandseter E, Lee-Hammond L, Lekies K, Wyver S, eds. *The SAGE Handbook of Outdoor Play and Learning.* SAGE Publications Ltd; 2017:85-94. doi:10.4135/9781526402028
6. Lester S, Russell W. *Children's right to play: an examination of the importance of play in the lives of children worldwide*. Bernard van Leer Foundation; 2010.
7. Lambert A, Vlaar J, Herrington S, Brussoni M. What Is the relationship between the neighbourhood built environment and time spent in outdoor play? A systematic review. International Journal of Environmental Research and Public Health. 2019;16(20):3840. doi:10.3390/ijerph16203840
8. Moore R, Cosco N. Early Childhood Outdoor Play and Learning Spaces (ECOPALS): Achieving Design Quality. In: Tremblay RE, Boivin M, Peters RDeV, eds. Brussoni M, topic ed. *Encyclopedia on Early Childhood Development* [online]. https://www.child-encyclopedia.com/outdoor-play/according-experts/early-childhood-outdoor-play-and-learning-spaces-ecopals-achieving. Published: May 2019. Accessed September 25, 2024.

9. Allport T, Mace J, Farah F, Yusuf F, Mahdjoubi L, Redwood S. 'Like a life in a cage': Understanding child play and social interaction in Somali refugee families in the UK. *Health Place.* 2019;56:191-201. doi:10.1016/j.healthplace.2019.01.019
10. Nigg C, Niessner C, Nigg CR, Oriwol D, Schmidt SCE, Woll A. Relating outdoor play to sedentary behavior and physical activity in youth - results from a cohort study. *BMC Public Health*. 2021;21:1716. doi:10.1186/s12889-021-11754-0
11. Fyfe-Johnson AL, Hazlehurst MF, Perrins SP, et al. Nature and Children's Health: A Systematic Review. *Pediatrics*. 2021;148(4):e2020049155. doi:10.1542/peds.2020-049155
12. Alderton A, O'Connor M, Badland H, Gunn L, Boulangé C, Villanueva K. Access to and quality of neighbourhood public open space and children's mental health outcomes: evidence from population linked data across eight Australian capital cities. *International Journal of Environmental Research and Public Health*. 2022;19(11):6780. doi:10.3390/ijerph19116780
13. Strange C, Bremner A, Fisher C, Howat P, Wood L. Local community playgroup participation and associations with social capital. *Health Promotion Journal of Australia*. 2017;28(2):110-117. doi:10.1071/HE15134
14. Wood L, Giles-Corti B, Zubrick SR, Bulsara MK. "Through the kids– we connected with our community": children as catalysts of social capital. *Environment and Behavior*. 2013;45(3):344-368. doi:http://dx.doi.org/10.1177/0013916511429329
15. Sallis JF, Spoon C, Cavill N, et al. Co-benefits of designing communities for active living: an exploration of literature. *International Journal of Behavioral Nutrition and Physical Activity*. 2015;12(1):30. doi:10.1186/s12966-015-0188-2
16. Gil T. The benefits of children's engagement with nature: a systematic literature review. *Children, Youth and Environment.* 2014;24(2):10-34. doi:10.7721/chilyoutenvi.24.2.0010
17. Almeida A, Rato V, Dabaja ZF. Outdoor activities and contact with nature in the Portuguese context: a comparative study between children's and their parents' experiences. *Children's Geographies*. 2023;21(1):108-122. doi:10.1080/14733285.2021.1998368
18. Cronin-de-Chavez A, Islam S, McEachan RRC. Not a level playing field: A qualitative study exploring structural, community and individual determinants of greenspace use amongst low-income multi-ethnic families. *Health Place*. 2019;56:118-126. doi:10.1016/j.healthplace.2019.01.018

19. City of North Vancouver. *CNV4ME City of North Vancouver Child, Youth and Family Friendly Strategy.* City of North Vancouver; 2021. https://www.cnv.org/community-environment/social-planning/youth/cnv4me. Accessed June 12, 2024.

20. Greater London Authority. *Social Infrastructure: Policy S4. Play and Informal Recreation.* Greater London Authority; 2021. https://www.london.gov.uk/programmes-strategies/planning/london-plan/the-london-plan-2021-online/chapter-5-social-infrastructure. Accessed June 12, 2024.

21. Gemmell E, Adjei-Boadi D, Sarkar A, et al. "In small places, close to home": Urban environmental impacts on child rights across four global cities. *Health Place*. 2023;83:103081. doi:10.1016/j.healthplace.2023.103081

22. Shoari N, Ezzati M, Doyle YG, Wolfe I, Brauer M, Bennett J, Fecht D. Nowhere to Play: Available Open and Green Space in Greater London Schools. *Journal of Urban Health*. 2021;98(3):375-384. doi:10.1007/s11524-021-00527-0

23. Bishop, K, Corkery, L. Introduction. In: Bishop K and Corkery L, eds. *Designing cities with children and young people: Beyond playgrounds and skate parks.* Routledge; 2017.

24. Adjei-Boadi D, Agyei-Mensah S, Adamkiewicz G, et al. Neighbourhood, Built Environment and Children's Outdoor Play Spaces in Urban Ghana: Review of Policies and Challenges. *Landscape and Urban Planning.* 2022;218:104288. doi:10.1016/j.landurbplan.2021.104288

25. Aerts J. *Shaping Urbanization for Children: A Handbook on Child-Responsive Urban Planning.* United Nations Children's Fund (UNICEF); 2018:85-85. https://www.unicef.org/reports/shaping-urbanization-children. Accessed June 12, 2024.

26. Gemmell E, Ramsden R, Brussoni M, Brauer M. Influence of neighborhood built environments on the outdoor free play of young children: a systematic, mixed-studies review and thematic synthesis. *Journal of Urban Health*. 2022;100(1):118-150. doi:10.1007/s11524-022-00696-6

27. Visser K, Van Aalst I. Neighbourhood factors in children's outdoor play: a systematic literature review. *Tijdschr Voor Econ En Soc Geogr.* 2021;113(1):80-95. doi:10.1111/tesg.12505

28. Lee EY, Bains A, Hunter S, et al. Systematic review of the correlates of outdoor play and time among children aged 3-12 years. *International Journal of Behavioral Nutrition and Physical Activity*. 2021;18(1). doi:10.1186/s12966-021-01097-9

29. Gray C, Gibbons R, Larouche R, et al. What Is the Relationship between Outdoor Time and Physical Activity, Sedentary Behaviour, and Physical Fitness in Children? A Systematic Review. *International Journal of Environmental Research and Public Health*. 2015;12(6):6455-6474. doi:10.3390/ijerph120606455

30. An R, Shen J, Yang Q, Yang Y. Impact of built environment on physical activity and obesity among children and adolescents in China: A narrative systematic review. *Journal of Sport and Health Science*. 2019;8(2):153-169. doi:10.1016/j.jshs.2018.11.003

31. Bornat D. *Housing design for community life*. University of East London, ZCD Architects; 2016. Accessed June 17, 2024. https://kb.goodhomes.org.uk/report/housing-design-for-community-life/

32. United Nations. *World Population Prospects 2022: Summary of Results*. United Nations, Department of Economic and Social Affairs; 2022:1-39.

https://unstats.un.org/unsd/demographic/sconcerns/densurb/densurbmethods.htm Accessed June 2, 2021.

33. Shaw B, Watson B, Frauendienst B, Redecker A, Jones T, Hillman M. *Children's independent mobility: A comparative study in England and Germany (1971-2010)*. Policy Studies Institute; 2013.

34. Herman KM, Craig CL, Gauvin L, Katzmarzyk PT. Tracking of obesity and physical activity from childhood to adulthood: The Physical Activity Longitudinal Study. *International Journal of Pediatric Obesity*. 2009;4(4):281-288. doi:10.3109/17477160802596171

35. Telama R, Yang X, Leskinen E, et al. Tracking of Physical Activity from Early Childhood through Youth into Adulthood. *Medicine and Science in Sports and Exercise*. 2014;46(5):955. doi:10.1249/MSS.0000000000000181

36. Kerai S, Almas A, Guhn M, Forer B, Oberle E. Screen time and developmental health: results from an early childhood study in Canada. *BMC Public Health*. 2022;22(1):310. doi:10.1186/s12889-022-12701-3

37. Mullan K. Chapter 3: Time for health. In: *A child's day: a comprehensive analysis of change in children's time use in the UK*. 1st ed. Bristol University Press; 2020. doi:10.46692/9781529201710

38. Lee H, Tamminen KA, Clark AM, Slater L, Spence JC, Holt NL. A meta-study of qualitative research examining determinants of children's independent active free play. *International*

*Journal of Behavioral Nutrition and Physical Activity*. 2015;12(5). doi:10.1186/s12966-015-0165-9

39. Benwell MC. Rethinking conceptualisations of adult-imposed restriction and children's experiences of autonomy in outdoor space. *Children's Geographies*. 2013;11(1):28-43. doi:10.1080/14733285.2013.743279
40. Andrews FJ, Stagnitti K, Robertson N. Social play amongst preschool-aged children from an inner and an outer metropolitan suburb. *Journal of Social Inclusion*. 2019;10(2):4-17. doi:10.36251/josi.144
41. Audrey S, Batista-Ferrer H. Healthy urban environments for children and young people: A systematic review of intervention studies. *Health Place*. 2015;36:97-117. doi:10.1016/j.healthplace.2015.09.004
42. Gill T. *Urban playground: How child-friendly planning and design can save cities*. RIBA Publishing; 2021. doi:10.4324/9781003108658
43. Smith F, Martinho-Truswell E, Rice O, Weereratne J. *How dashboards can help cities improve early childhood development*. Bernard van Leer Foundation; 2017.
44. Soja EW. The city and spatial justice. In: Bret B, Gervais-Lambony P, Hancock C, Landy F, eds. *Justice et injustices spatiales*. Espace et justice. Presses Universitaires de Paris Nanterre; 2010:56-72. doi:10.4000/books.pupo.415