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How can OECD countries empower children to be more physically active?

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Abstract

Increasing children's physical activity in OECD countries offers major opportunities to improve health, learning and well-being. Yet fewer than one in three children worldwide meet the World Health Organization's daily activity recommendations. This working paper reviews evidence from OECD countries to explore how governments can foster more active childhoods. Using an ecological framework and insights from leading researchers, it examines determinants of activity and presents case studies of initiatives across countries, including whole-school programmes, active transport schemes, street play, inclusive urban design and partnerships with families, schools and sports organisations. Promising initiatives share multi-component, child-centred designs. However, greater focus on leveraging friends, families and peers as agents of change could enhance impact. The paper concludes with policy lessons for building sustainable, cross-government approaches to reversing inactivity and embedding movement in children's daily lives. Achieving this requires cultural change, stronger evaluation and renewed prioritisation across schools, cities and communities.

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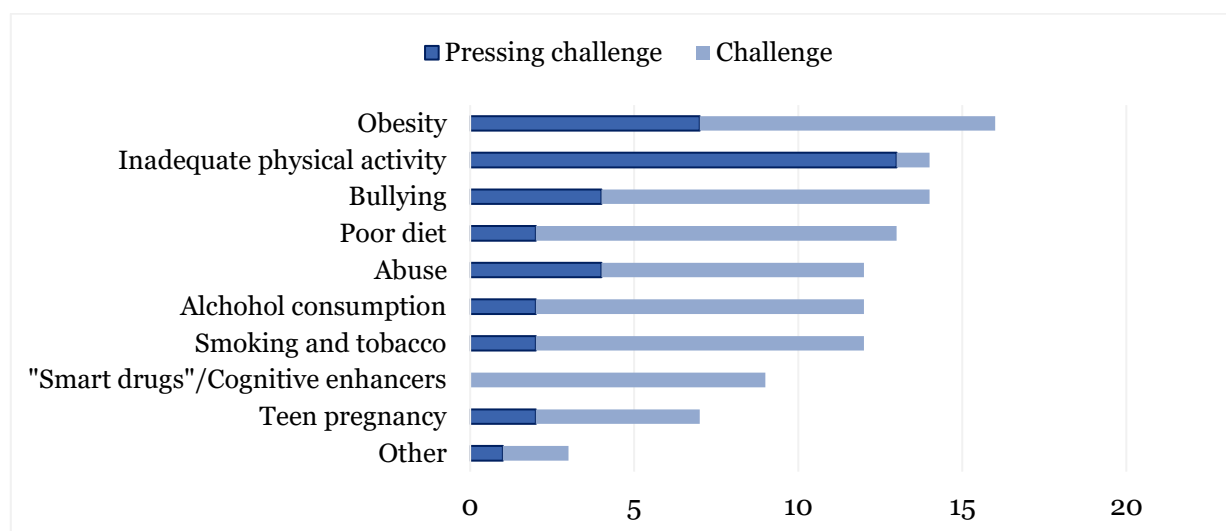
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1 Introduction

The last half century has seen several improvements in child health across the OECD, on average. There has been an increase in fruit and vegetable consumption, reduction in rates of accidental death and injury and a decline in alcohol consumption, smoking and teenage pregnancy (Burns and Gottschalk, 2020^[1]). The voices of children are increasingly invited and listened to in many OECD countries, with a range of initiatives that provide the opportunity for them to participate in decision-making, exercise their agency and act on issues that are important and relevant to their health and well-being (Gottschalk and Borhan, 2023^[2]). Although children's lives have clearly improved on a number of measures, an area of significant concern for policy makers, families and educators, is low levels of physical activity (PA). A 2022 survey of policy makers in OECD countries shows that inadequate PA and obesity are the two most pressing physical health challenges faced by respondent countries (Figure 1). These concerns are backed up by hard evidence. Today's children are, on average, less active and heavier than previous generations (Burns and Gottschalk, 2020^[1]). **Figure 1. Is physical inactivity the new smoking for children growing up in OECD countries?**



Note: N=23. Countries were given a list of policy challenges affecting children and asked to select those that were of concern in their countries and which of these they considered to be most pressing.

Source: OECD/CERI 21st Century Children Questionnaire (2022)

Establishing healthy behaviours in childhood increases the chances of positive well-being, education and health outcomes in both the present and later life. For example, staying active through childhood and adolescence substantially lowers the risk of adult obesity (Kwon et al., 2015^[3]). Obesity is associated with a higher chance of premature death and disability, and the younger someone becomes obese, the more likely they are to develop noncommunicable diseases (NCDs) like diabetes and cardiovascular diseases. Research on adult populations in the European Union (EU) found that, if everyone in the 27 EU Member States reached the recommended amount of PA for adults (150 minutes of moderate-intensity PA per

week), 11.5 million cases of new NCDs would be prevented over the next three decades and more than 10,000 premature deaths could be avoided each year, resulting in fewer costs for public health provision (OECD, 2019^[4]). Engaging in PA benefits a wide range of indicators encompassing physical, psychological, social, and cognitive health in children and adolescents (Poitras et al., 2016^[5]).

Increased PA at school has been linked to reduced mild to moderate depression, higher self-esteem, greater self-efficacy and resilience, enhanced equity for disadvantaged students and girls, and improved sleep quality (OECD, 2019^[6]; Larrinaga-Undabarrena et al., 2023^[7]). Studies have shown that PA interventions have led to significant reductions in depressive symptoms in children and adolescents, compared to control groups (Recchia et al., 2023^[8]). Furthermore, spending more time doing PA at school, rather than having a negative impact as is often presumed, has been shown to have a beneficial effect on academic outcomes (James et al., 2023^[9]). Beyond the individual benefits, there are a range of economic, social and environmental co-benefits of policy actions to increase PA, which can help countries' progress towards achieving many of the United Nations Sustainable Development Goals (SDGs). For example, improving mental health (health - SDG 3), early child development (education - SDG 4), empowerment among women and girls (gender equality – SDG 5), productivity (decent work and economic growth – SDG 8) and air quality (Sustainable cities and communities - SDG 11) (WHO, 2025^[10]). However, the purpose of this working paper is not to reiterate the well-established benefits of childhood PA, nor the existing WHO evidence-based guidelines (see Box 1). Instead, it focuses on a central question:

How can OECD countries empower children to be more physically active?

The paper is structured in two parts. Part one looks at the current evidence on PA levels in childhood, their determinants and the factors that shape them, from the level of the individual and their relationships, the organisations they engage with, their communities and the public policies that impact their lives. This section features contributions from leading researchers in the field. The second part of the paper is a collection of case studies from different OECD countries. It distils some of the key findings from their design, implementation and evaluation into relevant policy messages.

Box 1. World Health Organization guidelines of PA

The World Health Organization (WHO) Guidelines recommends that children aged 1 to 4 years engage in 180 minutes of physical activity daily, including some moderate to vigorous physical activity (MVPA) (WHO, 2019^[11]). For school-aged children and adolescents (5-17 years) the guidelines recommend an average of at least 60 minutes each day, on average, and the inclusion of muscle and bone strengthening activities several times per week as part of that (WHO, 2020^[12]).

MVPA refers to the intensity of activity as measured by an individual's metabolic response. Therefore, what qualifies as MVPA varies between individuals, depending on factors such as genetics, fitness level, and comorbidities. For many children, activities such as dancing, brisk walking, playground games, some household chores, running, and cycling are considered moderate to vigorous physical activity (Neil-Sztramko, Caldwell and Dobbins, 2021^[13]).

While clear physical activity guidelines are essential, they are insufficient alone. Stakeholders in OECD countries must create supportive policies, environments, and opportunities to enable population-wide behaviour change (Milton et al., 2020^[14]).

PA is one of three movement behaviours that the WHO has provided guidance on, the other two being sedentary behaviour (including screen time) and sleep. This working paper focuses on PA, with the recognition that policy making also needs to extend to the other movement behaviours.

2 The current state of physical activity in children

Physical activity levels and surveillance worldwide

International data show that most children today do not engage in sufficient physical activity. The Global Matrix 4.0 represents the largest compilation to date of PA data for school-aged children and adolescents (5-17 years), with analysis of various datasets and qualitative evidence across 10 PA indicators by teams of experts in 57 countries. The results of this initiative suggest that only between 27% to 33% of children and adolescents meet the recommended amount of MVPA per day (Aubert et al., 2022^[15]).

PA tends to decline with age, and younger children tend to be more active than adolescents. In the early years, a pooled analysis looking at data from children under 5 from 33 countries estimates around half are meeting WHO recommendations (Chong et al., 2024^[16]). A similar analysis done using data on adolescents estimated this figure to be less than 20% (Guthold et al., 2020^[17]). Although current global surveillance of PA provides valuable insights, it faces challenges that are important for policy makers to consider for decision-making.

Box 2. Trends and challenges in the global surveillance of PA

Surveillance of physical activity is vital to track trends, inform policies, identify inequalities, and allocate resources efficiently. (Reilly et al., 2025). However, total PA is hard to measure, it is often spontaneous and takes place in settings that researchers struggle to access. Existing international/global surveillance programmes of physical activity among children and adolescents are affected by numerous limitations which undermines their ability to inform action, reducing the visibility of alarming low levels of physical activity, and potentially keeping them off public health priority lists (Reilly et al., 2022).

The main limitations of existing physical activity surveillance programmes include inconsistencies in the methods and physical activity definition across and within the international surveillance initiatives. This has resulted in differences in estimated national prevalence of physical activity, as well as contradictions in cross-country comparisons, affecting the global monitoring of change over time (Aubert et al. 2021). The update of the WHO physical activity guidelines (Bull et al., 2020) also made the most commonly used physical activity questionnaires outdated and no longer able to estimate compliance with the updated WHO physical activity guidelines (Aubert et al, 2021). There is also a global underrepresentation of:

- Low- and middle-income countries;
- Children younger than 4 years;
- Children aged 5-9 years;

- Children and adolescents living with disability or chronic condition;
- Children and adolescents who do not attend school;
- Children and adolescents belonging to indigenous populations and other minority groups;
- Children and adolescents living in rural settings.

The WHO Global Action Plan on Physical activity 2018–2030 emphasised the importance of understanding and addressing social inequalities in physical activity participation across the life spectrum (WHO, 2018). Existing physical activity national/international surveillance programmes are generally inadequate to endorse this role, with sample sizes that may be too small or not representative and are generally not assessing the association with socio-ecological factors and individual characteristics (gender, age, disability, belonging to a minority group) (Aubert et al., 2021; Reilly et al., 2022). In the absence of good quality systematic surveillance, inequalities are less visible so less likely to be targeted by physical activity policy or interventions.

While device-based surveillance (i.e., the use of accelerometers) can produce internationally standardised physical activity data, with estimation of the time spent being active, sedentary, or sleeping, this physical activity measurement method lacks the ability to capture qualitative information regarding the context, type or purpose of the activity undertaken (Reilly et al., 2025). A greater focus on the surveillance of specific domains and contextual factors (e.g., active transportation, active/outdoor play, organised sports) might be more practical to inform the development of physical activity promoting policies/programmes and to understand inequalities and responses to changes in policy. The use of device-based surveillance comes with the risk that the increased cost could lead to increased inequality in global surveillance (Reilly et al., 2025).

In response to repeated expert calls for a globally acceptable, harmonised, and culturally adaptable surveillance tool (Aubert et al., 2021; 2022), researchers from 14 countries (spanning all continents and income levels) are co-developing the Global Adolescent and Child Physical Activity Questionnaire (GAC-PAQ). This app-based tool is designed to assess key physical activity domains as well as adherence to WHO guidelines in 8–17-year-olds (Larouche et al., 2024). If validated and widely adopted, the GAC-PAQ could help harmonise data collection and reduce disparities in surveillance at the global scale.

Strengthening physical activity surveillance is a scientific priority and should be a policy imperative. High-quality, inclusive data enable governments to track progress, identify inequalities, and evaluate the real-world impact of interventions and investments. Policy makers should view surveillance as a foundational component of evidence-informed action. While current global surveillance efforts have notable limitations, they continue to highlight alarmingly low and unequal levels of physical activity among children and adolescents. Improving surveillance quality, inclusivity and harmonisation is key to shaping effective and equitable policy responses, and ultimately, to ensuring that no child is left behind in the global effort to promote physical activity for health and well-being.

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Fundamental motor skills

Fundamental Motor Skills (FMS) are the foundation for more complex physical activities. They include basic locomotor skills (e.g., running and jumping), object control skills (e.g., catching and throwing), and stability movements (e.g., balancing and twisting) (Gallahue, 2012^[18]). Cross-sectional and longitudinal studies have shown that children's FMS competence is positively linked to their health-related physical

fitness, PA enjoyment, and perceived PA competence. Children's motor skill competence can also result in sustained levels of PA and health-related fitness over time (Gao et al., 2021^[19]). Children with higher levels of FMS are more likely to participate in physically active recess programmes, and participation in active recess programmes may increase levels of FMS (Drijvers et al., 2021^[20]).

Studies published between 2005 and 2019 showed that worldwide, children are not attaining adequate FMS proficiency by age seven compared to cohorts from the 1990s (Bolger et al., 2021^[21]). Such proficiency is crucial for successful participation in sports, games, and other physical activities. Improving FMS levels among children requires improving the quality of education instruction, the amount of FMS practice time allocated, formative feedback and periodical assessment of FMS competence, (Bolger et al., 2021^[21]). Structured leisure-time PA (i.e., deliberate sports practice directly instructed by an adult sports trainer) is thought to be more beneficial for children's FMS development, compared to unstructured PA (i.e., child-initiated non-formal PA and physically active play) (Dapp, Gashaj and Roebbers, 2021^[22]). However, more evidence would be helpful to make this conclusion stronger.

Play

Most children's PA derives from play rather than formal exercise (Burns and Gottschalk, 2020^[11]). The research literature defines *play* as the voluntary participation of children in activities that are fun or satisfying, usually because they want to, not because they must. *Active play* is simply play that includes any intensity of physical activity (participating PLATO-Net members, 2022^[23]). Pellegrini and Smith (1998^[24]) defined three kinds of *active play*: Stereotypic behaviours (rocking, kicking etc.); Exercise play (climbing, running, jumping etc); and Rough-and-tumble (R&T) play (wrestling, grappling etc.). Whereas exercise play may or may not be social, R&T play is always social. The term *rough play* includes R&T but is slightly broader, encompassing numerous kinds of physical and pretend play such as big body play (e.g. rolling, tumbling), risky play (e.g. at height or at speed) and imaginative/ fantasy play (e.g. cops and robbers, superheroes) (Hart and Tannock, 2019^[25]). Despite adults often misidentifying rough play as violent or aggressive and trying to prevent it, it serves important developmental functions: learning emotional control and how to exercise restraint in potentially competitive or conflictual situations (Smith and St George, 2022^[26]). Although it is more typically young boys who use physical play to understand their surroundings and relationships, not all boys show these behaviours, while a significant number of girls do too (Hart and Tannock, 2019^[25]).

Global estimates indicate that fewer than half of children and adolescents participate in more than two hours of unstructured active play daily, and fewer than half spend more than two hours outdoors per day (Aubert et al., 2022^[15]). By contrast, a meta-analysis of studies including children and adolescents revealed a pre-pandemic baseline value of 2.7 hours per day for the use of digital devices, rising to 4.1 hours per day during the pandemic (Madigan et al., 2022^[27]). Looking only at adolescents, the time spent using digital devices is much higher, with OECD data showing that the average fifteen-year-olds' total digital device usage is roughly 5 hours per day (OECD, 2019^[28]). Excessive use of digital devices (defined as over 4 hours per day) outside of school for leisure is associated with lower engagement in schooling and learning activities across most OECD countries, while more moderate use is associated with higher mathematics performance, higher life satisfaction and sense of belonging at school (OECD, 2025^[29]). The relevance here is that excessive use of digital technologies may displace other health promoting behaviours. However, it cannot be assumed that simply using digital devices less will result in a child being more physically active. Targeted initiatives are needed to directly promote more active forms of play, to make a meaningful contribution to increasing overall PA levels.

Thankfully, children often express a desire for more play. However, there is a disparity between the play children want and need and what is permitted by adults. Many of the perceived barriers (such as supervision practices, playground rules), such as those that constrain active play during school recess, are

socio-cultural and driven by adults' concerns over the risk of harm (Jerebine et al., 2022^[30]). Children, regardless of gender, intentionally seek out risky situations that can be simultaneously exhilarating and fearful but offer important opportunities for enjoyment and the development and cognitive and physical skills. An integrated approach is needed to shift the attitudes of parents and caregivers, community members, educators and policy makers, in recognition of the crucial role that engaging with risk plays in growing up (**Error! Reference source not found.**).

Box 3. No risk, no fun?

In today's increasingly risk-averse society (Gill, 2007^[31]) children's opportunities for independent movement and risk-taking during play have greatly diminished. While safety is a valid concern, research shows that risk-taking in childhood PA plays a crucial role in fostering autonomy, resilience, and overall development (Tremblay et al., 2015^[32]). Outdoor environments provide a dynamic space for playful risk-taking. International literature finds that risky play such as climbing and exploring new terrains, allows children to test their physical limits, manage fear, and develop risk perception skills that are critical for safety and resilience as well as for enhancing children's confidence and problem-solving capacities (Lee et al., 2025^[33]). Because of these benefits, active outdoor play should be recognised as an important right and opportunity across the lifespan (Lee et al., 2025^[33]).

Risk-taking is a fundamental part of children's growth, appearing throughout different developmental stages. From infancy, as children begin to crawl and explore their surroundings, they learn to assess their physical capabilities and navigate potential dangers. Research highlights that experience in self-directed movement, such as crawling, helps infants develop the ability to judge risk and avoid hazards like drop-offs or water edges (Burnay and Cordovil, 2016^[34]; Burnay et al., 2021^[35]). These early risk-assessment skills continue to evolve as children grow and test their limits while moving around, shaping their ability to interact with the world safely and confidently (Cordovil et al., 2015^[36]). A key paradox in development is that children need experiences that help them learn how to navigate risks safely, yet gaining that experience often involves engaging in seemingly dangerous activities. Risky play, such as climbing, jumping from heights, or running at high speed, involves a risk of physical injury (Sandseter, 2007), but it is vital during childhood, as it provides children with essential opportunities to test their physical limits, assess risks, and develop problem-solving skills. Studies indicate that risky play has positive effects on PA and social health, creativity and resilience (Brussoni et al., 2015^[37]).

The balance between providing supervision and allowing freedom to explore depends on the characteristics of the child and on the environmental conditions. It is natural that higher levels of supervision are needed in some environments and for younger children. For example, close supervision and environmental modifications are needed to avoid young children falling from windows or balconies. Yet, experiences dealing with uncertainty, progressive levels of spatial and social exploration and fine-tuning the emotional mechanisms involved in overcoming potentially physical risky encounters, are needed for children to develop (Cordovil et al., 2009^[38]). As children grow, they will encounter risk in increasingly complex environments, such as city streets in their neighbourhoods while walking to school. Learning to move independently in their own residential and school areas, increases opportunities for children to act as specialists of space, by diversifying their physical, social and emotional repertoire through place encounters, and by fostering a sense of belonging to those places (Lopes, Cordovil and Neto, 2018^[39]).

However, children's opportunities to explore the environment on their own have been increasingly restricted, mainly due to growing parental overprotection. Exaggerated fears of injury or societal judgment have led adults to curtail children's opportunities to engage in risky play and even to move about in their environment. As parental concerns over safety grow, children's freedom to explore and develop risk-management skills is increasingly limited. Some behaviours that were natural in the previous generations are now considered too dangerous. A particularly concerning example is the decline in children's independent mobility, such as walking or cycling to school alone.

Allowing children to take risks is not about neglecting safety, it is about providing them with the experiences necessary to develop resilience, problem-solving abilities, and a strong sense of autonomy. Instead of shielding children from all potential dangers, adults must create environments that

balance protection with opportunities for exploration and risk-taking. By doing so, they empower children to become confident, competent individuals, ready to engage with the world around them.

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Organised sports

Physical activity generally declines as children enter adolescence (Aubert et al., 2021^[40]). This is partly because, as they grow up, priorities change and activities that create opportunities for acceptance and admiration by peers and the construction of a coherent identity become major pursuits (Granic, Morita and Scholten, 2020^[41]). As a result, being physically active becomes increasingly associated with the identity of being “sporty” (i.e. participating in competitive sports) and less associated with play and leisure time. For instance, older adolescents tend to participate less in PA during recess (Drijvers et al., 2021^[20]). For some children, competitive sports can help to keep them engaged, foster greater enjoyment and stimulate prosocial behaviour (Li and Shao, 2022^[42]). OECD data from 2015 shows that 43% of 15-year-old students reported exercising or practising sports before school and 66% did so after school (OECD, 2017^[43]). However, for other children (particularly girls), the focus on competition can lead to disengagement (Wintle, 2022^[44]) and eventually dropout from organised sports (Box 4). Moreover, the time, cost, and location of sport opportunities have been repeatedly identified as key practical barriers to children’s participation in sports, in addition to peer disapproval and gender stereotyping (Somerset and Hoare, 2018^[45]) scholars argue that it is necessary to shift the narrative towards a greater balance between competitive, leisure, social and well-being elements when encouraging PA (Westerbeek and Eime, 2021^[46]). Policy makers can help by promoting a “sport-for-all” policy orientation, to ensure sports are associated with positive participation outcomes (Volf, 2024^[47]). In addition to rebalancing the narrative from competition to leisure, adequate MVPA in mid-childhood and adolescence probably requires reaching higher levels of MVPA in early childhood (Ramos-Munell et al., 2024^[48]).

Physical education

Although students can engage in PA on different occasions during the day, physical education classes are one of the few regular opportunities that students have to be active with qualified supervision that can promote a PA that is moderate to vigorous (OECD, 2019^[6]). When it comes to OECD education systems, the Programme for International Student Assessment (PISA) represents the gold standard of international assessment of 15-year-old students’ skills, knowledge, attitudes and values. In the 2015 PISA cycle, just over half of students reported taking part in at least two physical education classes a week, with participation declining as they get older (OECD, 2017^[43]). Students who participated in at least two physical education classes per week exercised about 0.5 days more each week than students who did not. Nonetheless, a substantial proportion of children in OECD countries still received only one physical education class per week. On average across OECD countries, 41% of compulsory instruction time at primary level is devoted to providing students with fundamental skills in literacy and numeracy and 10% is given to physical education and health (OECD, 2023^[49]). At lower secondary, on average across OECD countries where instruction time per subject is specified, fundamental skills in literacy and numeracy make up 27% of the compulsory curriculum (14 percentage points lower than in primary education), while the share of time allocated to physical education and health falls by 2 percentage points, to 8% (OECD, 2023^[49]). International comparative OECD data separating physical education from health education is not available, so it is not possible to get more granular insights into the proportion of instruction time in which children are physically active.

Because only a small group of countries and economies fielded the PISA PA questions to students across more than one cycle, it is not possible to calculate meaningful averages or examine global trends. Nonetheless, valuable insights can be gained from the small number of countries and economies that fielded the physical education question across more than one round. Ireland saw the biggest increase in the number of children attending physical education classes at least once a week between 2015 and 2022. This period saw numerous reforms, including the establishment of [Sport Ireland](#) (the agency that oversees the promotion and development of sport) in 2015 and the publication of *Get Ireland Active!*, the [National Physical Activity Plan for Ireland](#) in 2016. During the same period, France saw the largest increase in the number of students attending physical education classes three or more times per week. During this period there were a number of important policies aimed at promoting PA in schools, notably the launch of the [Health-Promoting Schools](#) (l'École promotrice de santé) programme in 2016.

Both countries have seen notable progress in Global Matrix assessments, where Ireland has improved in three indicators between the 2018 and 2022 assessments (overall PA, school environment and physical education) (Carlin et al., 2024^[50]) while France has progressed in seven indicators (active transportation, active gaming, physical fitness, organised sport and PA, community and environment, family and peers, and government) (Fillon et al., 2023^[51]). Although low levels of PA continue to be a challenge, some OECD countries are managing to shift the needle when it comes to key indicators.

Equity

In general, while socio-economic status (SES) strongly influences learning outcomes (OECD, 2023^[52]), the evidence linking SES to physical activity (PA) in children is weaker at the global level. PISA reveals that, on average, participation in MVPA outside of school was more common among advantaged than disadvantaged students (OECD, 2017^[43]). However, an umbrella review of systematic reviews covering mainly Europe, North America and Australia (O'Donoghue et al., 2018^[53]) found that, despite convincing evidence for the impact of SES measures on adult PA levels, the relationship was weaker for children. This may be explained by the fact that the relationship between SES and physical activity is not uniform across contexts. Van Sluijs and colleagues found that adolescents from high SES have better activity profiles than those from low SES in high-income countries (HICs), with the reverse true for low-income and middle-income countries (LMICs) (van Sluijs et al., 2021^[54]). In high-income countries, children from wealthier families often benefit from greater access to structured sport, safer neighbourhoods that support active transportation, and parents who model active lifestyles. By contrast, in some low- and middle-income countries, children from wealthier families may have more access to sedentary opportunities such as digital devices or private transportation, while less affluent peers may rely more on active transportation or unstructured play. Cultural norms also play a role: in some settings, higher-SES families place greater academic demands on children at the expense of physical activity, while in others, athletic achievement is a valued marker of social status. Overall, it can be said that SES has a significant influence on children's opportunities for physical activity, but the direction and magnitude of this influence vary substantially depending on country and cultural context (O'Donoghue et al., 2018^[53]).

In the early years (>5 years old), SES is consistently found to be unrelated to overall PA levels, potentially because young children tend to engage in more unstructured PA, such as play (O'Donoghue et al., 2018^[53]). When it comes to 5 to 17 years old/school-aged children and adolescents, the study found more evidence that SES influences overall PA levels, however the findings remain mixed. This suggests that the importance of SES measures may increase as children age, bearing in mind that parental influence on PA levels decreases as children age and there are additional costs associated with the PA of adolescents, such as membership of sports clubs and purchase of equipment. Overall, further research is needed to clarify the relationship between SES and PA across different ages and countries, as existing data likely underestimate inequalities.

Box 4. Drop it like it's hot

Participation in organised sport can make an important contribution to overall PA levels in childhood, as children who consistently engage in sport tend to perform more MVPA than their non-participating peers (Mooses and Kull, 2020^[55]; Shull et al., 2020^[56]). Adolescence is a prominent time for organised sports dropout in both girls and boys and participation in organised sports peaks for both girls and boys around the age of 11 (Eime et al., 2016^[57]). After this age, although there are declines in participation for both boys and girls, there is a steeper decline for girls compared to boys. One study of over 700 000 individuals registering to play 11 sports in Victoria, Australia, found that participation rate for girls aged 15–19 is less than half of that for those aged 4–14 years (Eime, Harvey and Charity, 2019^[58]).

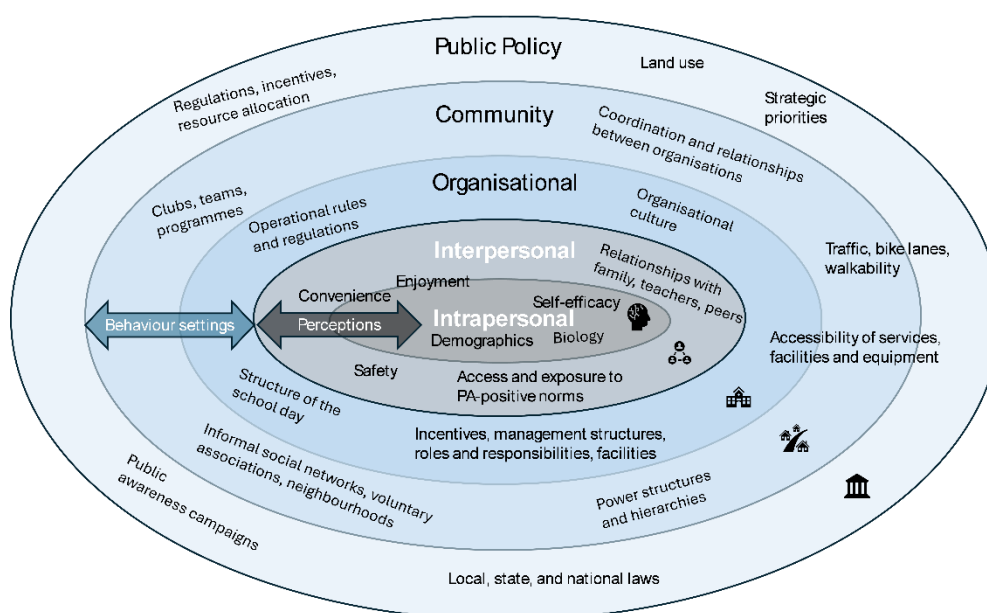
There are a number of reasons why older children may drop out of organised sport. For example, they may feel that organised sport participation erodes their sense of perceived independence with regards to their thoughts, actions, and feelings or that they lack competence in the necessary skills. For adolescents, it is important that the decision to participate in sports is perceived as an authentic expression of their true identity, which helps them to feel able to rise to life's challenges and capable of achieving goals that they set themselves (Crane and Temple, 2014^[59]). In terms of gender, boys tend to sample or play more sports than girls and this can be important for finding a sport that they enjoy (Eime et al., 2016^[57]). Research indicates that socio-economic disparities are more pronounced in organised sport participation than in overall PA, and adolescent dropout may result from a lack of positive or diverse sport experiences earlier in childhood (Owen et al., 2022^[60]).

Living in households with higher parent education has been associated with greater adolescent participation in organised sport teams and PA classes (McCormack et al., 2023^[61]). Households with higher parent education are more likely to be able to afford organised sports or classes as well as having more time and transportation options to support their adolescents' participation (Muñoz-Galiano et al., 2020^[62]). Coaches play a key role, and the creation of an inclusive motivational climate is important for lowering the risk for dropout (Back et al., 2022^[63]). At the same time, making sure that the available opportunities for organised sport are meeting the diverse needs and allowing for sufficient exploration of different activities in the crucial years leading up to adolescence is vital (Eime et al., 2016^[57]).

3 Promoting physical activity

There are many ways to think about promoting PA in childhood, but the Social Ecological Model (SEM) has become widely used because of its comprehensive approach. First conceptualised by Bronfenbrenner (1979^[64]), later formalised as a theory applied to health promotion (McLeroy et al., 1988^[65]) before being adapted specifically for PA (Sallis et al., 2006^[66]), the SEM is frequently cited¹ in the field of PA promotion. The SEM adapted for this paper conceptualises five nested levels of influence that determine participation in PA, as well as its duration and intensity (Figure 2). In this way, it provides a useful map for where interventions might seek to make positive changes. Ecological models are particularly well suited for studying PA, because it is inextricably linked to context (Sallis et al., 2006^[66]). It highlights the environmental causes of behaviour and the interplay between individual, social, and environmental factors that sustain unhealthy behaviours. For instance, community structures can directly influence PA behaviour and also serve as access points for public policy to impact PA.

Figure 2. Social Ecological Model (SEM) used in this working paper



Notes: The keywords within the ovals are examples, rather than an exhaustive list.

Source: Author's elaboration, adapted from (McLeroy et al., 1988^[65]; Sallis et al., 2006^[66]; Bronfenbrenner, 1979^[64]).

¹ Google Scholar (2025^[268]) states that, in 2024 alone, McLeroy et al., 1988 was cited almost 1000 times in academic publications.

Importantly, the SEM makes a distinction between level of the intervention and the target of the intervention. Although all PA interventions ultimately aim to change individual behaviour, the level at which they act depends on the immediate goal they are trying to influence, not just the long-term impact they hope to achieve. Intervention strategies extending to the community and policy levels of influence can be considered large scale, as they reach larger numbers of people and tend to be highly visible (Mehtälä et al., 2014^[67]). The next sections will delve deeper into the research at each level.

Intrapersonal level

This level examines individual characteristics such as knowledge, attitudes, behaviour, self-concept and skills. Interventions targeting this level can include techniques to modify social influences as an immediate outcome, with the ultimate goal being to change an individuals' PA behaviours in the long-term. In their systematic review, Hu and colleagues (2021^[68]) found that gender was the most commonly reported influencing factor, while self-concept (self-efficacy, perceived health, physical self-perception, participation motives, and perceived competence and enjoyment) was the strongest predictor of PA participation in children or adolescents. When it comes to adolescents, the more they focus on the pursuit of intrinsic goals, such as developing new skills, the more autonomous they feel and the more they tend to engage in PA (Duncan et al., 2015^[69]). These findings are also supported by qualitative studies, which found that 'not being good at sport', 'fear of being judged/embarrassed' and 'conforming to a gender stereotype' were important barriers faced by children (Somerset and Hoare, 2018^[45]).

Boys tend to be more physically active than girls and modifiable variables such as psychological differences (e.g. perceptions of efficacy) and cultural elements (e.g. gender stereotypes) are heavily correlated with these gender differences (Hu et al., 2021^[68]). Boys also report higher participation in organised sports than girls and, when they do participate in sport, they tend to be more active than girls (Kokko et al., 2018^[70]). Some studies of gender disparities in OECD countries find positive progress, with the number of girls playing sport gradually growing and particular increases in traditionally male-dominated sports, such as football and cricket (Eime et al., 2021^[71]). However, studies still show that perceptions of competence, self-worth and body image continue to be barriers to girls' sport participation, along with a lack of supportive peers, parents and teachers and a physical environment and school curriculum not adapted to their needs or preferences (Duffey et al., 2021^[72]). OECD societies have a duty to break down the harmful gender stereotypes that are frequently shown to be a barrier to PA [e.g. see (Somerset and Hoare, 2018^[45])].

When looking at the example of learning to swim without assistance, an important and potentially life-saving life skill, OECD research reveals that women are far less likely to be able to swim than men in almost all countries, birth cohorts, and levels of education (Borgonovi, Seitz and Vogel, 2022^[73]). Steps can - and should - be taken to reduce this gap. For instance, normalising a diversity of swimwear, so that girls and women feel more comfortable going in water in social situations, educating girls and women about swimming while menstruating, so that they feel comfortable going in water at any stage of their cycle and raising awareness among boys and men about the detrimental impact the male gaze can have on girls' willingness to enter the water (Borgonovi, Seitz and Vogel, 2022^[73]). Importantly, any initiative that aims to encourage girls to be more physically active should not focus on simply convincing girls to use existing facilities (which have often not been designed with their needs in mind) but instead provide them with purpose-built facilities where they can feel safe, free from harmful stereotypes and be active on their own terms (Walker and Clark, 2023^[74]).

Perceptions of safety are vitally important to address when it comes to a variety of PA. For instance, evidence from Melbourne, Australia shows that distance to school is one of the most important predictors of active travel in adolescents and those with higher residential density around their school environment had a greater probability of exclusive active school travel, provided that they also perceived a safer traffic

environment (Loh et al., 2024^[75]). Numerous studies have found that perceptions of traffic exposure, inadequate pedestrian infrastructure, and dangerous local driving environments act as a barrier to active travel (Box 5) for children (Buttazzoni, Nelson Ferguson and Gilliland, 2023^[76]; Fialho, 2023^[77]). The OECD has been monitoring mortality rates in countries since the 1970s. In the last ten 10 years, child deaths in road crashes have reduced by 36% and pedestrian fatalities have seen a notable reduction of nearly 30%, despite many more cars being on the road (ITF, 2024^[78]). This progress is not uniform, and road deaths increased by more than 20% over the past ten years in five OECD countries: Colombia (43.2%), Costa Rica (40%), New Zealand (34.8%), the United States (24.6%) and the Netherlands (20%) (ITF, 2024^[78]). Scholars suggest that multi-level interventions need to make the traffic environment safer while at the same time modifying perceptions of safety when promoting active travel (Loh et al., 2024^[75]). Having favourable environmental infrastructure alone is not sufficient to promote PA in wealthier countries and consideration of social factors such as family, home, school and community is crucial (Aubert et al., 2022^[15]). This makes effective policy making more challenging. Research has shown that, although parents often give considerable support to policies and infrastructural changes that encourage active travel, this tends not to extend to initiatives that restrict personal car travel (Sahlqvist et al., 2024^[79]).

Box 5. Active Transportation to School

Worldwide, numerous school-based PA promotion initiatives are being developed and implemented. The central role that schools can play in combatting physical inactivity is well established, given their reach, exposure and societal function. Shared responsibility for supporting active travel to and from school often leads to weak coordination and unclear leadership, limiting its impact as a strategy to increase children's physical activity.

Active transportation to and from school offers numerous benefits. It contributes to the healthy development of children while also addressing sustainability and liveability challenges in urban environments. In terms of PA, however, the contribution of active transportation to school on daily PA levels is often overlooked by national policy makers. Several studies [e.g. (Klinker et al., 2014^[80])] combining objective travel data (GPS) and PA intensity data (accelerometry) show that approximately 40% of daily MVPA is achieved through the use of active transportation. The most recent study using similar methodology (Remmers et al., 2024^[81]) further confirms that active transportation accounts for roughly 40% of daily MVPA in preschoolers as well. This highlights the immense potential of active transportation to school in combatting physical inactivity and achieving health benefits as only few interventions have the potential to contribute up to 40% of children's daily MVPA.

To harness this great potential, it is crucial that active transportation to and from school is considered as an integrated 'wicked problem' that can only be successfully changed when embraced by multiple disciplines and stakeholders across all social ecological levels. Issues such as distance to school, (perceived) time efficiency, (perceived) social and traffic safety, traffic flows and parking issues around schools, bike storage capacity at schools, and policy support from municipalities and schools must all be well-coordinated simultaneously to facilitate the transition towards recognising active transportation to school as the 'norm' and fully utilising its potential. A shift in thinking is needed to achieve multiple behaviour changes. Often, the perspectives of the child and parent are emphasised as the primary stakeholders required to change their transportation behaviour. However, in order to create a (school) environment that promotes and facilitates active transportation, changes in the attitudes and behaviours of other stakeholders—those responsible for the physical environment, school policies, liveability and safety matters—are essential. This requires a collective effort and the formulation of shared benefits that active transportation to school can provide for society as a whole.

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Interpersonal level

Support from friends, parents, and teachers are significant positive predictors of a child's physical activity levels and promising intervention targets. A systematic review of the factors that influence participation in PA in school-age children, reported that the most mentioned factor at the interpersonal level was the influence of friends (Hu et al., 2021^[68]). Intervention studies found that social support from peers is positively associated with PA across adolescence but the effect sizes for this factor alone are still small (van Sluijs et al., 2021^[54]). This suggests that peer influence interacts with factors such as gender, available facilities, and the family environment, and together these shape children's and adolescents' PA levels (Sun et al., 2023^[82]). Peer strategies are thought to be relatively low-cost and feasible to implement, while offering benefits such as companionship, social pressure to sustain activity, and a sense of safety in numbers (Buttazzoni, Nelson Ferguson and Gilliland, 2023^[76]).

Parents directly influence their children's physical activity by providing logistical support, such as transport to sports facilities, and indirectly by modelling active lifestyles (Matos et al., 2021^[83]). Moreover, parents' own PA behaviours are associated with children's PA behaviours (Arufe-Giráldez et al., 2024^[84]) and the role of positive parental influence of childhood PA has been repeatedly observed across different studies (Su et al., 2022^[85]). Unfortunately, it is estimated that the prevalence of insufficiently active adults globally has been increasing, from roughly one-quarter of adults in 2000 to roughly one-third in 2022 (Strain et al., 2024^[86]). However, as a group, high-income western countries are close to meeting the 15% rate of reduction of physical inactivity by 2030, set by WHO. Within this group, 12 are classified as on track with a high degree of certainty (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Luxembourg, Netherlands, Spain, Sweden and the United Kingdom) (Strain et al., 2024^[86]). Within the EU, while participation in sports and exercise changed little between 2017 and 2022, weekly participation in other forms of PA (for recreational or non-sport-related reasons) increased from 44% to 53%, on average (European Commission, 2022^[87]). These averages hide inequalities, with lower rates of exercise reported in women, the elderly and lower socio-economic groups (OECD/WHO, 2023^[88]).

Research suggests that interventions supporting parents' co-PA (i.e. when parents are physically active with their children), PA modelling and parenting approaches show the most promise for children aged 5-12 (DE-PASS, 2024^[89]). When it comes to adolescents, there is weaker evidence regarding the strength of the association between parental PA and child PA (on behalf of DE-PASS, 2024^[90]). During adolescence, and in particular mid-adolescence (14-17 years), the relationship between adolescents and parent changes, and peer influence becomes increasingly important (Granic, Morita and Scholten, 2020^[41]). Policies should therefore include interventions that target the range of relationships that are the most relevant for promoting PA across childhood, including parents but also friends and teachers (Hu et al., 2021^[68]). Three interventions with a strong interpersonal component can be found in sections 0 1 and 0 of this working paper. Consideration also needs to be given to changing family dynamics in many OECD countries. For instance, many children spend a significant amount of time being cared for by grandparents while both parents are working. Therefore, researchers emphasise the importance of building the capacity of grandparents and other caregivers to both directly and indirectly influence PA levels (Arufe-Giráldez et al., 2024^[84]).

Organisational level

This level corresponds to social institutions with organisational characteristics that determine how they operate, such as formal and informal rules and regulations. Interventions at this level will make changes to factors including institutional commitment/ aims, behavioural incentives, management structures, roles and responsibilities, learning opportunities and facilities. PA interventions operating at the organisational

level aims to spark a shift in organisational culture and facilitate the adoption, implementation and institutionalisation of effective programmes.

Schools

Schools can play a decisive role in promoting PA by empowering students, supporting teachers and improving the school environment to encourage movement throughout the school day.

When children are offered a range of activity options and are involved in designing PA programmes, their motivation and enjoyment increase (Jaymes and Webster, 2023^[91]). Listening to students' perspectives helps schools understand what children actually enjoy and value in physical activity (Adank et al., 2023^[92]). Providing diverse choices also strengthens children's self-efficacy and increases the likelihood that they will remain active as they grow older (Egan et al., 2024^[93]). For example, research reviewed by the OECD highlights that offering choice in physical education classes is essential for fostering inclusion and participation (OECD, 2019^[61]).

Teachers' expertise and confidence are key predictors of children's participation in PA (Hu et al., 2021^[68]). Tailored professional development and ongoing training enable staff to design inclusive, engaging programmes and to offset the age-related decline in moderate-to-vigorous physical activity (Carson et al., 2014^[94]).

The physical and organisational setting also matters. Extending playground opening hours, clarifying rules around play (for instance, where ball games are allowed), and ensuring equitable access to space can make PA a normal and valued part of daily school life. These actions are particularly important in urban public schools, which often face greater challenges in promoting PA than rural or private schools (Hu et al., 2021^[68]).

No single school policy is likely to make a substantial difference to students' PA levels. Instead, taking a comprehensive school approach (Box 6) is crucial. Wendt et al (2023^[95]) reported that the general willingness of the teaching staff, available resources, access to knowledge and information, and involvement of stakeholders were significantly associated with the adoption of a PA policy. Additionally, in order for initiatives targeting PA in the school community to be effectively implemented, teachers need to see their value and feel confident that implementation will result in change, and they need the competence to carry it out (McGann et al., 2020^[96]). Schools offering multiple physical activity opportunities within a whole-school PA programme are more likely to cultivate a strong PA culture, with stakeholders recognising designated times for activity (McMullen, Kallio and Tammelin, 2022^[97]).

Box 6. The need for comprehensiveness in school-based PA promotion

To successfully intervene in complex health and behavioural challenges, comprehensive programmes and approaches are essential. The Comprehensive School Physical Activity Program (CSPAP) is an example of a programme in which various elements of PA promotion within and around schools work together. Originating in the United States, CSPAP is now implemented globally, though most widely in English-speaking countries. CSPAP focuses on physical education, PA during the school day, PA before and after school (including active transportation), staff involvement at school, and the involvement of families and the broader community. Despite the many potential benefits of comprehensive PA promotion, studies applying this broad approach in practice are limited. Most school-based PA initiatives focus on one or two elements of the programme, with physical education and PA during school hours - mainly during recess - being the dominant focus (Kuhn et al., 2021^[98]).

Verjans-Janssen et al. (2020^[99]) conducted a longitudinal intervention study focusing on the various elements of CSPAP in the Netherlands. Rather than prescribing the programme, primary schools chose their own PA interventions under the guidance of process facilitators. This resulted in a range of schools which varied in terms the comprehensiveness of their CSPAP. Schools that implemented PA interventions across all CSPAP elements showed a significant increase in students' MVPA after one to two years, reduced sedentary behaviour, and improved weight status. These effects were observed in children aged 9-12, where, based on international trends, a decrease in MVPA was expected. No positive effects were observed in schools that focused only on deepening specific elements of CSPAP without achieving high levels of comprehensiveness. This highlights the importance of clearly defining the goal pursued with intervention approaches. Qualitatively deepening and improving a specific element may be very well justified, and sometimes desirable. However, to meaningfully increase PA among children, a comprehensive approach appears to be the key to success, requiring a shift in thinking on school-based PA promotion.

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In OECD countries, there are concerns regarding the shortage of specialist physical education teachers, particularly in primary education (ISCED 1) (OECD, 2019^[6]). Physical education specialists more frequently employ practices that encourage children's exploratory behaviour, listen to their views, and discern their preferences compared to generalist teachers, and their training allows them to devote more time to getting children active and less time trying to keep the class calm (Adank et al., 2023^[92]). An over-reliance on generalist teachers can create challenges for schools related to a lack of knowledge, skill, and comfort with the topic (Langille and Rodgers, 2010^[100]). Specialists are also in a better position to act as PA *champions* in the school. Research carried out in one Canadian city shows stakeholders at different levels agreed that having individuals who have a passion for PA and health was crucial for a school to have a supportive culture and create local level policies to promote PA (Langille and Rodgers (2010^[100]). International comparative research also finds that school-based PA promotion has the highest chances of success if there is an established and motivated PA champion at the school, whose promotion efforts are supported by the leadership and general staff (McMullen, Kallio and Tammelin, 2022^[97]). When an individual has *champion* status they can more easily have an impact on school-level policy development and the overall success of policy implementation in a school. This *champions* position does not need to be filled by the same role in every school and can range from the principal to a classroom teacher or physical education specialist, provided the individual is given support to develop their knowledge and skills.

Classroom teachers can play a key role in promoting PA during lessons, provided they are given targeted support in the form of training, resources and institutional incentives to meet the needs of a diverse range of pupils. It is therefore crucial to engage all levels of the school community to fully integrate PA into the broader school system (Daly-Smith et al., 2021^[101]). When trying to integrate PA in primary school classrooms (sometimes referred to as brain breaks, activity breaks, active lessons, and movement lessons) Michael et al. (2019^[102]) found that teachers require tailored administrative arrangements, resources, motivation and training. For example, providing teachers with access to alternative rooms or facilities that can be modified to facilitate movement is important to give them confidence that they can conduct the activity in a safe, controlled and careful manner (Daly-Smith et al., 2021^[103]). Whole-of-school PA initiatives like *TransformUs* (Box 7), offer a way to increase PA while also providing potential solutions to declining student engagement, absenteeism, and teacher burnout.

Box 7. The TransformUs Intervention, Australia

The Active Schools initiative is part of the state government of Victoria's [commitment](#) to improving PA in children. One effective whole-of-school programme endorsed by the Active Schools initiative is [TransformUs](#), designed to create supportive environments and integrate meaningful movement into daily teaching across all subjects for all students (aged 3-18). The primary school programme includes active academic lessons, active school environments (e.g., standing desks, playground line markings), health lessons, active homework, active breaks, and newsletters for parents, all aligned with the Australian primary curriculum (Salmon et al., 2011^[104]; Salmon et al., 2023^[105]). Teachers are provided with high-quality teaching resources, professional development opportunities, and practical strategies to enhance student engagement and academic outcomes. Backed by over 16 years of research, TransformUs is a cost-effective, evidence-based programme (Brown et al., 2024^[106]). In 2008-2012, *TransformUs* was evaluated in 20 Primary Schools in a 2.5 year trial (Salmon et al., 2023^[105]; Koorts et al., 2022^[107]) and key outcomes included:

- 85% of teachers reported improved concentration among students.
- 82% of teachers observed increased time-on-task following active breaks.
- Students reported greater enjoyment and satisfaction with learning.

Compared to traditional lessons, students in TransformUs schools:

- Spent up to 63 minutes less time sedentary and were 5 minutes more active each school day.
- There were also improvements in physical health, such as lower body mass index, reduced waist circumference, lower blood pressure, and higher vitamin D levels.

TransformUs Secondary has been adapted for secondary schools through participatory action research and piloted for effectiveness. The secondary school programme includes active academic lessons, an active school environment, health lessons, active homework, active breaks, and peer support, all aligned with the Australian secondary curriculum (Contardo Ayala et al., 2025^[108]). Following the pilot, most students expressed positive engagement with these strategies, and 90% expressed interest in continuing them. Teachers observed significant improvements in classroom behaviour, including student agency.

TransformUs All-Abilities ensures the programme is accessible to all students, including those with additional needs. Developed through interviews with parents and key organisations, a pilot study (Mazzoli et al., 2021^[109]) and co-design workshops with educators, *TransformUs All-Abilities* provides tailored adaptations for sensorial, physical, cognitive, and social-emotional disabilities. Adaptations of class lessons are based on the TREE model (Teaching, Rules, Equipment, Environment) proposed by the Australian Sports Commission (2020^[110]). This framework offers practical recommendations for modifying teaching styles, rules, equipment, and learning environments to ensure inclusivity and accessibility for students with diverse abilities in different school settings.

TransformUs Higher Ed (Lander et al., 2019^[111]; Lander et al., 2020^[112]; Lander et al., 2023^[113]) is designed to equip future teachers with strategies to integrate PA both inside and outside the classroom. The programme aligns with the Australian Professional Standards for Teachers: Graduate Teacher Level (AITSL, 2017^[114]) and is currently embedded in five Australian universities, reaching over 1,500 pre-service teachers. Feasibility, effectiveness, and implementation studies (Lander et al., 2019^[111]; Lander et al., 2020^[112]; Lander et al., 2023^[113]) demonstrate that *TransformUs Higher Ed* enhances pre-service teachers' willingness to implement active pedagogies, boosts teaching confidence, and bridges the gap between theory and practice.

By incorporating movement into classrooms, *TransformUs* aims to improve academic outcomes, engagement, classroom behaviour, and well-being while supporting teachers and fostering a positive school environment. *TransformUs* is available to all primary, secondary and special schools across Australia and since launching nationally in 2024, is currently reaching more than 820 schools and has over 2 300 teacher registrations.

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Sports clubs

While schools play a central role in promoting physical activity, other organisations are also critical in shaping children's PA behaviours. Meta-analytic evidence suggests that focusing efforts on only one setting, such as schools, is unlikely to make a substantial positive impact on PA and obesity in children unless the wider environment is supportive of behaviour change (Love, Adams and van Sluijs, 2019^[115]). Part of the reason for this is that the consistent presence of structure, routine, and/or regulation within a day positively shapes the PA behaviours of children (Brazendale et al., 2017^[116]).

Outside of school (e.g. at weekends or during the summer break), because days are less structured and often without consistent routine, children have more autonomy and this leaves more time that can be filled with activities that are less favourable when it comes to PA. Multi-country analysis found that children accumulated significantly more MVPA on weekdays versus weekend days during school months (on behalf of the International Children's Accelerometry Database (ICAD) Collaborators, 2021^[117]). Although obesity is driven by complex interactions between environmental, behavioural, biological, and genetic factors, behaviours play an important role and evidence shows that, on days when children and adolescents are in "structured" settings, such as school, extracurricular programmes or day camps, their behaviours are more favourable than on days with less structure (Brazendale et al., 2020^[118]).

Because of the influence of daily structure on PA, sports clubs are another key organisation that can provide important opportunities to raise the PA levels of children. Kokko et al (2016, p. 75^[119]) defines a sports club as:

"A voluntary civil activity-based community organisation that organises sport-related activities for participants in a given sport(s). Naturally, there is a wide variation between clubs based on different national (developed vs. developing countries, sports system) and local characteristics (type of sport, size of the club)."

While many sports clubs have long histories, their primary focus often lies in delivering high-quality sports experiences and growing membership, rather than promoting healthier lifestyles through sports (Meganck et al., 2014^[120]). Even if a sport club has other priorities, it can still influence the health behaviour of members through its day-to-day activities. A comparative study of sports clubs across Belgium (Flanders), the Czech Republic, Finland, France, Ireland and Sweden found that two out of three children and adolescents participated in sports club activities and sports club, and participants were more likely to meet PA recommendations than non-participants (Kokko et al., 2018^[121]). Furthermore, the likelihood of sports club participants meeting the recommendations for MVPA increases with age (Kokko et al., 2018^[121]). This emphasises the potential of sports clubs in combatting declines in PA as children move through adolescence. However, Kokko et al. (2018^[121]) also highlighted important shortcomings; a significant proportion of sports club participants still did not meet the MVPA recommendations, particularly girls.

The challenge of getting more sports clubs to have a stronger focus on health promotion is highly relevant in OECD countries. For instance, Meganck et al (2014^[120]) surveyed over 150 youth sports clubs in Belgium

(Flanders) and concluded that less than one in five clubs had a strong health promotion aspect to their aims and approach. Clubs that were founded more recently tended to score better, as did clubs that focused on both leisure and competition. Of particular relevance for this working paper, youth sports clubs tended to have a better health promoting orientation than adult clubs (Meganck, Seghers and Scheerder, 2016^[122]). The authors suggest including health promotion as an integral part of the formal training of club officials, often organised at the level of the sports federation.

Practical tools to support implementation, monitoring, and evaluation of health promotion strategies in sports federations remain scarce (Van Hoyer et al., 2023^[123]). One of the few examples emerged from the European Commission-funded Sports Club for Health initiative, which published guiding principles and an application model for clubs in 2017 with special considerations for different age groups including children (Koski et al., 2017^[124]). Research in Victoria, Australia reveals that implementing the required partnerships for health promotion initiatives in sports settings face human and financial resource challenges, particularly for regional sport organisations working in partnership with community sport clubs to implement programmes developed by national or state-based organisations (Donaldson et al., 2021^[125]). One of the few studies on implementing health promotion initiatives in sports settings was conducted on eight promising interventions of various sports clubs in France. It revealed four key competencies of managers of these health promotion interventions: having a deep understanding of the public and environment; acquiring a high capacity to mobilise internal and external human resources; possessing communication skills and; having an ability to write grant applications (Van Hoyer et al., 2021^[126]). At present, there is still limited evidence on how sports clubs implement health-related interventions. One promising example is the case of the Gaelic Athletic Association Healthy Club Project (HCP) in Ireland, which has had success in placing health promotion on the agenda of sports clubs and designing an informal policy for health promotion in sports clubs (Van Hoyer et al., 2024^[127]).

Due to the significant culture change required, sports programmes run by clubs and supported by federations require modifications at the club management and policy levels. Programmes also need changes to enhance their consideration of the cultural, social, and economic factors that influence these levels and develop context-specific approaches to increasing PA levels of inactive people in their community, including children (Ooms, Kruijsbergen and Collard, 2021^[128]). A core goal for policy makers in OECD countries should be to support sports clubs and national sports federations working with children to ensure health promotion activity aligns with the core business of the clubs. Policies and practices must also bear in mind that relationships, especially friendships, remain key to both initiation and maintenance of sports club participation, while parents facilitate participation and children with more active parents were more likely to participate (Howie, Daniels and Guagliano, 2018^[129]). Until recently, most research on sports clubs has focused on adult populations and more evidence on child populations is required.

Community level

At the community level, interventions tend to focus on changes within a political, geographic or social network boundary. This could be developing social networks, voluntary associations and neighbourhood amenities, enhancing coordination and relationships between organisations and promoting shifts in political and economic power structures.

Promoting PA in children requires building safer neighbourhoods with high quality and accessible facilities within the community. For example, research has found that weekend PA is influenced by the quality of the environment within 100 metres of young children's homes (Remmers et al., 2024^[81]). Lack of appropriate infrastructure, equipment and facilities are frequently cited as barriers to PA promotion for children of all ages (Nally et al., 2024^[130]; McCormack et al., 2023^[61]). McCormack et al. (2023^[61]) found that, compared to adolescents with just one park that was a shorter distance away, those with multiple parks and recreation facilities slightly further away are more likely to take part in organised PA. This finding

emphasises the importance of choice and diversity of options for promoting PA in children. The importance of diversity is also reflected in other studies. Van Sluijs et al (2021^[131]) noted that, despite limited high-quality evidence on environmental influences on children's PA, existing findings suggest that multipurpose, multifunctional urban design is important for early and late adolescence.

Beyond access to parks and recreation facilities, neighbourhood walkability factors such as street connectivity, safe walking and cycling routes, and access to public transportation have also been identified as important correlates of children's physical activity, particularly for active play and active transportation outside of school [(Salmon and Timperio, 2007^[132]; Kärmeniemi et al., 2018^[133]; Cerin et al., 2022^[134]]. Similarly, a cross-sectional study of children aged 11–19 years in 14 countries found land use mix-diversity, proximity to recreation facilities, and accessibility and walking facilities to be protective factors against sedentary behaviour for girls in particular (Anjana et al., 2024^[135]). The research literature shows that access to outdoor play areas with fixed equipment, green space, and loose parts (e.g. ropes, boxes, tires, or other waste or natural materials such as sticks, leaves) is most likely to be associated with higher PA in children (Pereira et al., 2024^[136]) (Arufe-Giráldez et al., 2024^[137]). In the home environment, the presence of active play equipment, such as trampolines and bicycles, is also associated with higher levels of PA (Arufe-Giráldez et al., 2024^[137]). In school, well-designed playgrounds, with more square metres per child, quality fixed equipment such as high bars and soccer goals, and a supportive climate created by teachers, have a higher chance of contributing to increased PA in school-aged children (Van Kann et al., 2016^[138]; Nally et al., 2024^[139]). When it comes to very young children (aged 2-3), not all play facilities at childcare centres are positively associated with PA levels. In the study by Gubbels et al (2012^[139]), they suggest that use of larger facilities such as slides, swings, and sandboxes should be further examined, since they possibly limit children's activity levels. Instead, childcare centres should try to optimise the use of indoor space for playing, create outdoor playground markings, and provide jumping equipment. Importantly, work needs to be done to make school and childcare facilities accessible to children out of hours. Research in the United States (US) found that less than half of schools allow community access to facilities outside school hours, a trend observed in other countries as well (Guerra et al., 2024^[140]).

Yet, the influence of the physical environment on PA behaviour is not only determined by the mere presence or absence of certain place characteristics but also by the perceptions that children have of those public places, something referred to in the literature as *place attachment*. The person–process–place (PPP) framework (Scannell and Gifford, 2010^[141]) defines place attachment as a bond between an individual or group and a place. In the PPP framework, the person dimension refers to its individually or collectively determined meanings. The process dimension includes aspects such as emotional bond, feelings of security, expectations and patterns of activity that grow over time and become associated with a place. The place dimension emphasises individual or collective attachment to specific aspects of a place or neighbourhood (e.g. a park bench with fond memories or an especially beautiful pond). A systematic review of papers from 2010-2021 indicates that place attachment is a highly relevant construct when trying to understand behaviours and, in most cases, place attachment leads to beneficial behaviours (such as PA) (Dang and Weiss, 2021^[142]). Scheller et al. (2024, p. 2^[143]) apply the PPP framework to children and youth's PA in the following ways:

Person – What are the individual or collective connections of children and youth to PA-friendly places in their neighbourhood?

Place – Which PA-friendly- and unfriendly places are identified by children and youth and what are their characteristics?

Process – Which psychological mechanisms are involved in the attachment of children and youth to PA-friendly places?"

The concept of place attachment emphasises how the five levels of the SEM interact and can reinforce each other. In the study, Scheller et al. (2024^[143]) found that friends and family were the most cited personal

factors for place attachment. This highlights the influence of social interaction, which is echoed in much of the wider PA literature. They also found that individual memories and milestones linked to overcoming personal challenges, for example injuries sustained through risky play, strengthen place attachment. Furthermore, having a physical environment that contains green space, water and nature, facilitates recovery by offering opportunities for relaxation before, during or after bouts of PA, especially when equipped with benches and plenty of shade. One way of helping to build place attachment through positive memories and experiences is through working with children to co-create spaces with them. This is supported by the literature, where a systematic review of papers from 2010–2020 concluded that involving community members, children and families, in playground renovations can be an important determinant of their use, as well as overall PA levels in children (Padial-Ruz et al., 2021^[144]).

Article 31 of the [UN Convention on the Rights of the Child](#) (UNCRC) recognises play as a fundamental right for children, and dedicated infrastructure, such as playgrounds, is important for supporting it. However, children routinely appropriate and enjoy places that are not designated play spaces, which can bring them into conflict with adults, who might see their play as anti-social or a nuisance (Hyde, 2024^[145]). Denying children the right to play outside of designated areas limits children’s opportunity to be physically active through spontaneous play. For example, in London, United Kingdom (UK), there are over 7 000 ‘No Ball Games’ signs, which carry no legal weight and limit opportunities for play and movement by the city’s children (London Sport, 2025^[146]). It was recently estimated that only one in four children growing up in the UK play out regularly on their street, whereas almost three-quarters of their grandparent’s generation reported playing outside a few times a week (Save the Children UK, 2022^[147]). It is important for policy makers to recognise that neighbourhoods should support play beyond designated spaces, as restricting it risks suppressing children’s opportunities for PA.

Public Policy level

The public policy level of the SEM includes local, regional, and national laws and policies aimed at promoting PA among children. Policy-level changes play an important role in signalling to schools, organisations, and communities that PA promotion is an integral part of education (van Sluijs et al., 2021^[54]). Such changes may include modifications to regulations, incentives, accessibility of services/facilities, resource allocation as well as public awareness campaigns.

Policy makers face competing demands on limited financial and human resources. OECD average spending on public health prevention—which includes tackling risks such as smoking, alcohol use, obesity, and physical inactivity—declined between 2009 and 2013 but has since recovered, growing on average by 3.2% annually from 2013 to 2017 (OECD, 2019^[148]). More recent rises have also been documented in EU-27 countries, with prevention reaching 4% of healthcare spending in 2022, up from slightly less than 3% in 2019 (OECD/European Commission, 2024^[149]).

In their systematic review of the factors that influence PA in children, Hu et al (2021^[68]) note that research on PA policy remains limited. There are also definitional challenges with the evidence base. In their review of PA systematic reviews, Gelius et al (2020, p. 2^[150]) make an important distinction, after finding that reviews tended to conflate public policies, organisational policies, and interventions in multiple ways:

“Policies are not individual measures or actions to promote PA – they are not interventions but the framework in which interventions are tendered, developed, financed, or implemented, and it is therefore important to investigate the two separately.”

Similarly, in their evidence mapping of policy research in physical education, Scanlon, Lorusso and Viczko (2023^[151]), found that definitions of policy are rare. Taking a SEM approach is beneficial to avoid erroneous conflation of public policy with other levels of action. In addition to this approach, analytical tools such as

the comprehensive Analysis of Policy on PA (CAPPA) framework are useful, since they can help with defining specific types of policy, aspects of policy, and purposes of policy analysis and contribute to a standardisation of terminology which improves comparability of findings across different studies (Klepac Pogrmilovic et al., 2019^[152]). In this section, the analysis will centre on policy design, implementation and evaluation, while bearing in mind that a significant amount the literature on policy making to promote PA is hampered by inconsistent definitions.

Policy design

Policy design is the process of defining the goals of a policy action and creating the tools or instruments to achieve them. Insufficient levels of PA in children is a complex public health problem that requires comprehensive policy design. This entails employing multiple strategies across all lower SEM levels and sectors—such as health, sport, transport, and urban planning—while defining measurable monitoring indicators, allocating budgets for implementation and evaluation, including provisions for specific groups (e.g., children, people with disabilities), and deploying mass media components (e.g., marketing campaigns) (Klepac Pogrmilovic et al., 2020^[153]).

In their series of systematic reviews analysing the evidence of impact of government policies on PA and sport participation at population level Volf (2024^[47]) and colleagues outlined four broad areas² of policy action found in the research literature:

- Sport policy
- Education policy
- Active travel policy
- Media policy

Sport policy includes increasing the supply of sports facilities, lowering the financial barriers to entry, funding community partnerships to target key demographics such as children, women and people with disabilities and driving public interest in sports. However, they conclude that supporting traditional sports provision is unlikely to reduce inequalities in participation outcomes between populations. It should therefore be used as a complement to other policy actions to avoid structural factors from exacerbating inequities in PA outcomes (Volf et al., 2022^[154]). Even targeted programmes for different groups risk displacing existing users of sports facilities if not well-thought out (Volf, 2024^[47]). There is evidence that sports policies are more effective in increasing participation frequency in moderately active persons with a moderate level of inherent motivation than in stimulating participation in the least active, however direct facility provision will not work on the most inactive populations (Volf et al., 2022^[154]).

When it comes to education policy, physical education, school sport, classroom-based physical education, active school breaks, and shared use agreements for school spaces showed particularly strong evidence of impact (Woods et al., 2021^[155]; Messing et al., 2019^[156]). In particular, education policies that mandate a minimum amount of time for physical education lessons and support interventions for extracurricular PA were found to have the most evidence of effectiveness and potentially reduce disparities across schools (Gelius et al., 2020^[150]; Woods et al., 2021^[155]). As well as compulsory instruction time and extracurricular options, enforcing regulations requiring professional licensure of PE teachers as specialists and requiring adherence to PE standards and regular evaluation of PE outcomes can raise the quality of PE instruction, as can allowing children to spend more time outside (Woods et al., 2021^[155]). Setting a minimum duration

² It is noteworthy that the role of urban design in incentivising PA (outside of active travel infrastructure) did not feature in the systematic reviews of policies by Volf (2024^[47]) and indeed seems underrepresented in the literature base reviewed by this working paper.

of break times and policies to provide children with access to spaces that maximise the impact of the school's physical environment are also promising (Woods et al., 2021^[155]; Alghannam et al., 2023^[157]; DEDIPAC Consortium, 2017^[158]).

Active travel policies include developing more convenient transport infrastructure, promoting active travel choices and facilitating a shift of transport mode away from private car use (Żukowska et al., 2022^[159]). Infrastructure policies are those that promote interventions improving aspects of the built environment for PA, such as promoting mixed land use, improving sidewalk quality and connectivity and redesigning streets in favour of active transport (Gelius et al., 2020^[150]). For many years, a culture of car-oriented city planning, supported by economic dependencies, has created policy inertia, which requires courage from policy makers to make healthy trade-offs between competing objectives (Okraszewska et al., 2022^[160]). Although policy interventions aimed at infrastructure development show promise, they require commensurate awareness or behaviour change programmes (including education programmes) to achieve substantial shifts towards active transport (Ahrens et al., 2022^[161]).

Media policies operate through resourcing, coordinating, aligning, monitoring and evaluating sustained local and national level mass media strategies (den Braver et al., 2022^[162]). Policies that support mass media campaigns and advertising to promote PA among children in the community setting are recommended based on the available evidence (Gelius et al., 2020^[150]).

One way to ensure the relevance and applicability of policies designed to modify PA behaviour is to include children in discussions. A large body of literature suggests that child participation in decision-making on matters that affect them is not only essential from a child rights perspective, but also it is also associated with positive outcomes from the individual to societal level (Gottschalk and Borhan, 2023^[2]). Policies being produced without the deliberative processes involving a wide range of stakeholders may not recognise solutions to common implementation issues (Scanlon, Lorusso and Viczko, 2023^[151]). Participatory methods of engagement in policy making are increasingly gaining traction across the OECD as evidenced by the growing research base on child participation and co-creation (Gottschalk and Borhan, 2023^[2]). However, evidence from the UK shows that more involvement does not automatically mean better policy outcomes (Macauley, 2022^[163]). Instead, the type of involvement, the quality of the facilitation and the ways in which children are integrated into the process appear to provide better determinants of success (Macauley, 2022^[163]). For a deeper review of child participation in decision-making, see Gottschalk and Borhan (Gottschalk and Borhan, 2023^[2]).

Reviews have shown that, at present, there is a focus on policies that promote PA for specific target groups, especially children and adolescents, as well as policies changing the built environment and transport infrastructures/systems (Gelius et al., 2020^[150]). These are promising but, in many instances, not comprehensive enough. In their assessment of comprehensiveness for 76 countries' PA policies, Klepac Pogrmilovic (2020^[153]) and colleagues found that only around one-quarter of countries' PA policies were comprehensive, addressing multiple sectors, target groups, and implementation strategies. Designing effective policies means moving away from the assumption that traditional interventions focused on educating children will result in the expected behaviour change. Instead, comprehensive policies addressing behavioural incentives within children's PA systems and environments can help to make healthy choices easier and more widely accepted (Neveux, Ayuandini and Klepp, 2019^[164]).

Addressing behavioural drivers effectively means a policy design covering many different sectors. Research providing an overview of PA policy making in Germany, Ireland, the Netherlands and Poland showed that these countries are already engaged in diverse policy actions but there is a challenge to reach sectors beyond sport and health (such as education, transport, urban planning and tourism) (Gelius et al., 2021^[165]). For example, evidence suggests a need for intersectoral interventions in urban planning to improve access, safety and attractiveness of neighbourhoods (e.g. redesigning access, safety and aesthetics of streets and sidewalks) and cities [e.g. policies oriented at ameliorating sidewalk quality and

connectivity, in addition to promoting mixed land use (i.e. mixing residential and commercial areas)] (DEDIPAC Consortium, 2017^[158]).

Policy implementation

Even well-designed policies will not improve children's PA levels if implementation is poor. There is longstanding evidence on effective design of physical health interventions, which includes community involvement (e.g. co-design), targeting multiple behaviours (e.g. PA, sedentary behaviour and sleep), taking an integrated multi-component approach (e.g. targeting the home, school and neighbourhood environments), using technology where appropriate (e.g. using apps to record activity) and selecting the appropriate intervention duration (Aston, 2018^[166]). However, the evidence is less clear which factors most strongly influence successful implementation of interventions at both policy and practice levels, which means that efficacious physical activity interventions are often not successfully translated and sustained. At the practice level, use of practical guides – such as the PRACTical planning for Implementation and Scale-up (PRACTIS) framework, may increase the likelihood of successful implementation and scale up of physical activity interventions (Koorts et al., 2018^[167]).

Establishing national physical activity guidelines is a key tool for supporting the implementation of policies, surveillance, and practices that support PA. They provide an opportunity to improve communication on PA to diverse audiences, aiming to increase children's activity levels (Milton et al., 2020^[14]). PA guidelines can also help to enhance the delivery and accessibility of PA opportunities through, for example, channelling investment, rather than directly impacting the proportion of the population meeting recommended PA levels (Chalkley and Milton, 2021^[168]). In that sense, they are a crucial initial step but not enough by themselves, and appropriate and effective communication is fundamental to maximising their impact (Milton et al., 2020^[169]).

In 2019 WHO updated their 2010 guidelines and recommended that 5 to 17 years children and adolescents engage in one hour of MVPA per day, on average³. Research showed that the previous 2010 WHO guidelines had already been integrated into national guidelines in 25 countries, most of which are OECD countries, and directly adopted by 19 other countries (and the EU) (Parrish et al., 2020^[170]). In terms of the content of different national guidelines, a comparative study of six sets of guidelines (Hu et al., 2024^[171]) found that some (e.g. the UK) precisely reflect the WHO recommendations of 60 minutes, on average, per day across a week. Others, such as Australia, Canada and the US, recommend 60 min or more of MVPA per day as well as 3 days per week vigorous PA (Hu et al., 2024^[171]). Beyond the recommended amount of PA, guidelines vary considerably in terms of the intended age group, potentially reflecting cultural differences in formal schooling, some overlap in terms of age, and small differences in guideline phrasing (Parrish et al., 2020^[170]).

For children under 5, a European comparison study of 13 countries (De Craemer et al., 2024^[172]) found that only three [Finland, Portugal and Flanders (Belgium)] have guidelines for all three movement behaviours (PA, screen time and sleep) in the under-5s. Looking only at PA, this figure rises to eight (including Flanders) (De Craemer et al., 2024^[172]). Considering this, De Craemer and colleagues argue that while PA policy for school-age children is reasonably well developed across Europe, challenges persist: the development of policies for children under 5 remains limited; initiatives should better address physical, built, socio-cultural, and policy environments; and implementation and evaluation remain weak.

³ The 2019 guidelines refer to a one-hour average as opposed to a one hour total each day as specified in the 2010 guidelines.

More recently, in recognition of the potential importance of health opportunities across the entire day, several OECD countries have implemented 24-hour movement guidelines.⁴ An umbrella review of systematic reviews including data from children aged 5-19 concluded that four countries have established national 24-hour movement guidelines for children and/or adolescents: Australia, Canada, New Zealand, and South Africa (Silva et al., 2025^[173]). Although they are a useful policy lever, as argued by Langille and Rodgers (2010^[100]), the challenges of implementing guidelines are complex because there remains a pivotal responsibility for individual schools to determine how to implement PA strategies. Teachers also have an important bottom-up influence on school-level policies and so their buy-in and support is a determining factor for the effectiveness of guidelines at the local level, something that can vary depending on working socio-cultural context (Box 8).

Box 8. Implementing PA Guidelines: Lessons from Japan and the US

Webster and Suzuki (2014^[174]) provide an illustrative example of the factors affecting the impact of PA guidelines in Japan and the United States (US). Although both countries' education systems have such guidelines for schools, the uptake in US schools has been much slower than in Japan. The authors conclude that, although there are many similarities between the recommendations themselves, different educational priorities and working cultures might make implementing these opportunities more challenging in the US context. In Japan, norms and cultures surrounding education and policy making mean that top-down influence of government policy met no resistance from educational stakeholders, with broad support across ministries, school districts, and the school principals alike. In contrast, it is possible that teachers in the US see PA promotion to be in competition with the promotion of academic success.

Japan and the US are also very different in terms of the emphasis placed on formal accountability structures. The US is a high-accountability context, with emphasis on concrete monitoring, evaluation and assessment. As such, the advisory nature of guidelines and recommendations requires significant buy-in from schools and teachers. In contrast, Webster and Suzuki argue that Japanese working culture promotes dedication to one's employer and a subsequent willingness to learn new skills to improve job performance. As such, schools more willingly embraced government policy, even if this meant working longer hours.

Source: (Webster and Suzuki, 2014^[174]) *Land of the Rising Pulse: A Social Ecological Perspective of PA Opportunities for Schoolchildren in Japan*.

At the policy level, taking a coordinated approach to implementation is crucial. Some European cities, such as Copenhagen (Denmark), Gdynia and Wroclaw (Poland), and Stuttgart and Ulm (Germany) have implemented Sustainable Urban Mobility Plans (SUMP) to promote transport-related PA. Research suggests that co-operation between various local, regional and national agencies remains a prominent barrier to SUMP implementation, and having a central government unit to ensure efficient communication and a cohesive organisational culture might be one way of overcoming this (Okraszewska et al., 2022^[160]). Similarly, Forberger et al., (2022^[175]) found that effective coordination between different levels of government and agencies helped to achieve PA policy goals by alleviating some of the obstacles within and between administrations, including conflicting roles, lack of resources and personality differences. Whole-city approaches, which involve multiple actors collaborating vertically and horizontally, benefit from

⁴ These aim to show the optimal amount of physical activity within a 24-hour period.

political support. Coordination can be strengthened through legislation or strategic planning, including allocated budgets to ensure long-term co-operation (Forberger et al., 2022^[175]). Findings from a theory-based synthesis of evidence emphasise the importance of accounting for social, cultural, economic, and political circumstances when implementing healthy diet and PA policies, to enable a broad reach and sustainability of successful policies (Lobczowska et al., 2022^[176]). Implementation frameworks can enable policy makers to take into account these wider contexts and are beginning to make a larger impact in policy spheres (Box 9). While frameworks, guidelines, and local expertise are valuable, they cannot replace the need for national resources (Okraszewska et al., 2022^[160]).

Box 9. PA Implementation frameworks

Policy implementation frameworks are graphical or narrative representations of key constructs that aim to help improve the quality of implementation. As a minimum they need to include the implementation processes (e.g., stages), explain key constructs and provide structured approaches for translating policies into action to promote physical activity. These frameworks are useful to bring together the processes, determinants, and outcomes of a policy through considering the interplay between contextual and equity factors like gender, age, economic status/education/literacy, ethnicity, geographic isolation/distance, and culture.

In their systematic review of 38 policy implementation frameworks promoting healthy nutrition and PA, Lobczowska et al. (2022^[177]) found that the majority of frameworks have a complex scope that combines processes, determinants and/or evaluation of implementation. They also tend to address individual, organisational, community, and system levels together (although system level determinants are less frequently included). Using an implementation framework can also help with engaging relevant stakeholders in the policy implementation and evaluation phase, an important part of policy making. The frameworks often combine descriptive sections with prescriptive sections but rarely include equity constructs. It is recommended that, when using a framework, it should be complemented with a consideration of equity.

Particular attention should be paid to equity and diversity aspects, e.g. related to gender, cultural background, ethnicity and socio-economic status. Moreover, the choice of individual stakeholders from different groups (e.g., policy makers, industry, donors, implementers, target group/community) and hierarchical levels should be made by considering the nature of the policy (e.g. nutrition, PA) and the context in which the policy is implemented (e.g. public policy, school policy) (Wendt et al., 2023^[178])

Policy evaluation

An umbrella review of intervention evidence (van Sluijs et al., 2021^[54]) suggests poor implementation in education institutions tends to occur as interventions are scaled up and rolled out, which is why they have been largely unsuccessful in changing PA behaviours. Policy makers need to improve their evaluation of the support they are providing to programmes and ensure that more and better evidence is being generated on effective implementation in different contexts. Low levels of systematic policy and programme evaluation in OECD education systems were noted almost three decades ago (OECD, 1997^[179]). Still today, many education systems continue to lack the regulation, funding and guidance required to support a system-wide culture of evaluation (Golden, 2020^[180]). This is even the case among knowledge brokers, who are positioned at the forefront of generating evidence and promoting evidence-informed policy and practice (OECD, 2025^[181]). There are a large number of well-designed and promising interventions, but many are still small scale and tend to focus on only one setting, as such the net effect on PA levels at population level is likely to be negligible. Policy makers require programmes demonstrating effective large-

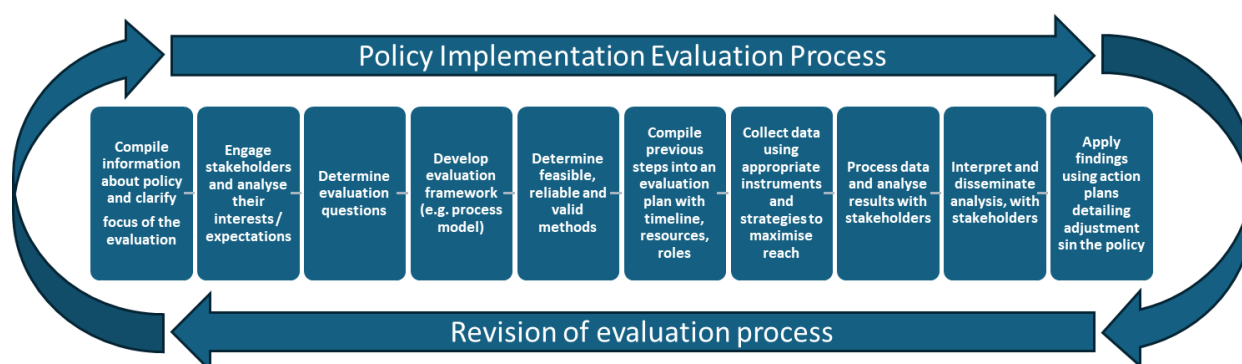
scale implementation before expecting impacts on population-level PA. This requires incorporating more impact evaluations into policy making using randomised control or synthetic control groups that can test if interventions work (OECD, 2025^[181]). It also entails conducting more natural experiments and implementation-focused research.

An international comparison of 76 countries (Klepac Pogrmilovic et al., 2020^[153]) showed that PA policies are generally more developed in high-income countries and countries of European and Western-Pacific regions. Although most of the included countries have formal written PA policies, guidelines for PA, quantifiable national targets for PA, and a health surveillance or monitoring system that includes measures of PA, quantifiable policy targets are still not available in nearly half of countries, and the levels of comprehensiveness, implementation and effectiveness of these policies are generally low-to-moderate. In European data sets, which tend to be the most comprehensive, the indicators relate to downstream outcomes such as self-reported physical activity levels, sedentary time, active transport to school, body mass index (BMI), and perceived health. There are a limited number of systems currently monitoring indicators at the policy and environment levels, such as PA funding and cross-sector coordination, infrastructure supporting PA and urban walkability, green space, and transport accessibility. Despite growing consensus on the need for holistic, fit-for-purpose monitoring systems based on systems approaches, aligning upstream and downstream indicators remains essential to drive systemic change and assess policy impacts on population health behaviours (Stanley et al., 2022^[182]). Since policy implementation in PA promotion has rarely been evaluated, there are likely to be some low-hanging-fruits that could boost policy knowledge through even simple monitoring of the implementation processes (Wendt et al., 2023^[178]). In low- and middle-income countries, PA policy development often competes with other pressing public health priorities (access to clean water, food, communicable diseases...), which may limit available resources, technical capacity, and political attention for implementing and evaluating comprehensive PA policies.

Evaluating the impact of policies on the PA levels of children is a highly complex but essential task to help OECD countries get children more active. At present, there is a strong need for evidence on the real-world effectiveness (including cost-effectiveness) of policies addressing PA (Emmert-Fees et al., 2022^[183]). The quality of current evidence regarding policy effectiveness is not considered sufficient to draw any meaningful conclusions on the actual impact of policies (Gelius et al., 2020^[150]). Addressing this gap will require policy makers to establish robust mechanisms to systematically evaluate all future PA policies

Policy evaluation requires a holistic methodological approach, combining methods to balance their respective strengths and limitations. To estimate short-term policy impacts, quasi-experimental methods using observational data are useful for identifying immediate causal effects of a policy (Emmert-Fees et al., 2022^[183]). For longer-term evaluation, simulation models can offer insights including potential combinations of policies that have not been jointly implemented before. Assumptions of both quasi-experimental and simulation modelling methods in policy evaluations should be credible, rigorously tested and transparently communicated (Emmert-Fees et al., 2022^[183]). One additional challenge is that there is a lack of practice-oriented guidance for policy makers on how to evaluate policy implementation, which requires a design that covers the complexity, dynamics, and interactions of determinants and outcomes (Wendt et al., 2023^[178]). However, emerging recommendations provide guidance that can support more effective evaluation (Figure 3).

Figure 3. 10 steps for evaluating the implementation of policies targeting diet, PA, and sedentary behaviour



Source: Adapted from (Wendt et al., 2023^[178])

Although impact evaluations can show whether a programme is effective, they cannot describe why it is effective. Successful scale up of a programme in an education system requires greater understanding of the implementation conditions. Reviews of the literature (Love, Adams and van Sluijs, 2019^[115]; Naylor et al., 2015^[184]; Cassar et al., 2019^[185]; Kennedy et al., 2021^[186]; McHugh et al., 2020^[187]; Lee et al., 2021^[188]) have consistently called for an increase in implementation research, such as process evaluations (Box 10), to fill this gap. These can improve the quality and quantity of the evidence base policy makers can draw on to provide policy support to scale up effective. Policy makers (including research funders) at all levels should ensure that there is robust evaluation of the programmes they support, so resources can be directed towards impactful and scalable initiatives that can really make an impact at the level of the population.

Box 10. Process Evaluation: Physical Activity 4 Everyone, Australia

Physical Activity 4 Everyone (PA4E1) is a whole-school PA programme for secondary schools. It provides free teaching resources, ongoing support from school health promotion experts, access to an evidence-based enhanced PE & Sport programme, professional development for staff, and funding support. Efficacy of the programme was demonstrated with a randomised controlled trial in 2012 to 2014, which involved 10 schools and found a positive changes in MVPA for adolescents. The programme was adapted, scaled up and tested in a trial (2017–2020), and a process evaluation was carried out on the scale-up trial.

Over two years, 24 schools took part in the scale-up trial and process evaluation. The trial drew on quantitative (e.g. surveys of physical education teachers), qualitative (e.g. focus groups with In-School Champions) and published data (e.g. from the efficacy trial). It was a mixed methods process evaluation analysing the acceptability, appropriateness, and feasibility of the programme from a range of perspectives. The process evaluation resulted in 12 recommendations developed for improving the PA4E1 programme and similar whole-school programmes, covering the themes of funding, roles, training, implementation support strategies and PA practices.

Source: (Sutherland et al., 2016^[189]; McLaughlin et al., 2024^[190])

4 Case studies

This section of the working paper contains nine case studies covering a wide range of themes discussed above, as well as a cross analysis of the cases. The levels at which each case study operates are summarised in Table 1. The level most commonly targeted is the intrapersonal level, where initiatives directly seek to modify PA levels of children. The least commonly targeted level is interpersonal, where initiatives seek to directly modify the relationships and social environment around the child with a view to influencing PA levels. This may represent as a missed opportunity, as research highlighted earlier in this paper shows that relationships are crucial mediators of PA performance. It is important to note, however, that the number of levels a case study addresses is presented here for discussion only and should not be taken as a measure of quality. To promote PA, policy makers need to ensure that there are a range of initiatives working together to cover all the levels.

Table 1. Overview of case studies

Name	Country	Intrapersonal	Interpersonal	Organisational	Community	Public Policy
Active Schools Flag	Ireland	X		X	X	X
Bike trains	Portugal	X	X		X	X
Catalonia's new urban model	Spain	X			X	X
Daughters and Dads Active and Empowered	Australia	X	X			
Gender-inclusive urban design	Sweden	X		X	X	
Healthy movement for children	Austria	X		X	X	X
Temporary play streets	UK	X	X		X	
Schools on the Move	Finland	X		X		X
Voice, Opportunity, Power toolkit	UK	X		X	X	

Notes: Case studies are shown in alphabetical order

Source: Author's elaboration

Active Schools Flag, Ireland

Since the last Global Matrix cycle in 2018, Ireland improved in three indicators ('Overall physical activity', 'School' and 'Physical Education') while two indicators ('Family and Peers,' and 'Government') were awarded grades for the first time (Carlin et al., 2024^[50]). This is encouraging, although caution is warranted when it comes to interpreting the changes, as the benchmarks used are not always consistent. Nonetheless, the goal of raising the levels of PA enjoys broad support across the government, with policy documents defining concrete actions in various government strategies.

One of the most well-established initiatives is Active Schools Flag (ASF), launched in 2009 by the Department of Education and Skills. At a national level, ASF is part of Ireland's Physical Activity Plan (Healthy Ireland/ Department of Health, 2016^[191]), implemented by Healthy Ireland, a government-led initiative that aims to prevent chronic disease by encouraging healthy lifestyle behaviours and creating

healthier environments. Healthy Ireland joined the programme as a funding partner of ASF in 2015, which enabled an expanded reach. Flags are used as a form of quality accreditation to foster behavioural change in Irish schools and Irish primary schools have a number of different flags they can earn, such as the Green Flag for Environmental Awareness (An Taisce, n.d.^[192]), and the Yellow Flag for Inclusion and Diversity (Department of Justice and Equality, n.d.^[193]).

At its core, ASF is a whole-school PA programme that emphasises quality physical education, co-curricular PA and partnerships with pupils, parents and the community (McGann et al., 2020^[96]). Before 2016, the programme also included extracurricular activities and active travel. However, in order to facilitate the reach of the programme, and bearing in mind that these activities take place outside of the teaching day, they were removed (Belton et al., 2020^[194]). The goal of ASF is to get “more schools more active, more often” (Active Schools Flag, n.d.^[195]). To receive flag accreditation, schools must implement positive changes in PA promotion; physical education; community partnerships; and organising an Active School Week (Active Schools Flag, n.d.^[195]). ASF is primarily an Irish primary school PA initiative but has recently begun developing a secondary school version of the programme. ASF has eight concrete streams of work to implement the programme:

1. Whole School Approach: To succeed in every classroom, management and staff commit to support, promote and actively engage with a process of self-reflection, action planning and collaboration at school wide.
2. Learning in a more physically active way: Teachers are supported to find ways to teach all subjects in a more physically active way, to energise learning indoors and outdoors using activity breaks and movement while learning.
3. Fun and Participation: Schools are incentivised to shift the focus away from competitive sport towards PA for well-being and participation, which strengthens friendships and a sense of connectedness to the school community.
4. Physical opportunities for all: Activities are planned with accessibility and sustainability in mind to get both staff and students moving more by broadening the range of PA opportunities to cater to the needs, interests and abilities of all members of the school community.
5. Student voice: The school must invite student feedback, ideas and suggestions, listen to them and act upon them. This also challenges students to lead change within their schools.
6. Learning from others: Schools can use the support network to find examples of best practices, innovation and successful initiatives are showcased, affirmed and shared.
7. Partnership: A collaborative approach where schools reach out to develop and strengthen partnerships with parents, local organisations and national agencies.
8. Co-design approach: The ASF criteria and programmes are developed in collaboration with schools, national organisations and expert groups.

The first step for schools seeking flag accreditation is to complete a self-evaluation of their current provision, guided by ASF's questions. The goal is to foster discussion and reflection within a school and help identify areas of strength and areas that might need further improvement. The flag is awarded to schools that meet the criteria set out by the ASF across each of the four pillars (Table 2). Schools must demonstrate that they meet all ASF criteria by providing visual evidence on their school website or via presentation slides before they are awarded the flag. To support the process, ASF provides examples of how these criteria could be met in different social and physical environments (Active Schools Flag, n.d.^[195]). After completing an application form, showing adherence to the success criteria, a screening application is sent by the school to the ASF Screening Committee. The committee reviews the application and takes one of two courses of action: either recommending the school for an accreditation visit or providing feedback on areas that need to be addressed before an accreditation visit can take place. Schools that

demonstrate compliance with the success criteria during an accreditation visit are awarded the flag. Once awarded, a school retains its ASF for a period of three years, after which it must apply for renewal.

An ASF national coordinator - in post for over a decade at the time of writing - heads the central ASF office and maintains constant communication with stakeholders. Funding has also been allocated for the design of ASF promotional videos, website, and provision of increased training opportunities, to strengthen the programme's reach (Belton et al., 2020^[194]). Because implementation fidelity is a key concern, the ASF office maintains teams of trained screeners and accreditors. Screeners and accreditors undergo one day of training at the beginning of each school year, and newly recruited screeners and accreditors carry out a 'shadow visit' of a school to learn about the process, led by an experienced member of the ASF team (Belton et al., 2020^[194]).

Table 2. ASF Award Criteria

Pillar	Success Criteria
Physical education	Staff completed the ASF self-evaluation document for physical education and submitted it to start the process
	School website/ presentation slides feature a section on physical education
	Minimum 60 minutes of physical education per week on the timetable for all students
	All physical education classes are taught at least five different strands (athletics, aquatics, dance, gymnastics, games, outdoor and adventure) each year
	School allocates a balanced amount of teaching time to each strand
	School prioritises a different strand for further development each year
	All teachers use the official lesson plans to guide delivery of the physical education curriculum
	School ensures the lessons are planned in such a way as to be accessible to all students
	Every child's progress is discussed with parents during parent-teacher meetings and feedback is included in the annual school report
	Staff have participated in professional development over the past 12 months and disseminated what they learned to their colleagues
	Physical education equipment is audited once per year and old or broken equipment is disposed of
Physical activity	Physical education equipment is well organised, readily accessible and clearly labelled
	Staff completed the ASF self-evaluation document for PA and submitted it to start the process
	School website/ PowerPoint features a section on PA
	School provides playground breaks twice daily
	Children are allowed to run during playground breaks
	School yard is zoned to allow children to engage in a variety of different activities
	School facilitates the use of sports equipment during break times
	School trains pupils as Playground Leaders
	School has sign posted an "Active School Walkway"
	Children and staff are encouraged to "do your talking as You're Walking" during breaktimes
	Every class incorporates short PA breaks into their daily routine
	School policy to ensure every classroom teacher incorporates an extended classroom-based PA break into the school day on days when children are unable to play outdoors
	All classes in the school participate in a non-competitive running initiative during the year that lasted 4 weeks or longer
	School incorporates PA into end of term days throughout the school year
Partnership	School ensures that all ASF activities are planned to be accessible for all pupils
	Staff completed the ASF self-evaluation document for partnerships and submitted it to start the process
	School website/ PowerPoint features a section on partnerships
	School established an ASF committee at the outset of the process and pupil members were given leadership roles
	Senior pupils conducted a "What Club are You In?" survey to find out about the different PA opportunities in the local community
	School has emailed Local Sports Partnership to inform them that they are working towards or renewing the ASF
	School has emailed the HSE Health Promotion Officer for the local area to let them know they are working towards or renewing the ASF
Active School Week	School has sought advice and support to ensure children with special needs can benefit from PE and PA opportunities
	Staff completed the ASF self-evaluation document for Active School Week and submitted it to start the process
	School commits to having "Active School Week" as part of their annual calendar
	School ensures that all Active School Week activities are planned to be accessible for all pupils
	School involves pupils in the design and organisation of the Active School Week
	Tracksuits were worn instead of uniforms for staff and pupils during Active School Week
	Active School Week took a cross-curricular approach to promoting PA
	During Active School Week, the school gave PA tasks as homework
	School organised a school-wide fun event during Active School Week
	School invites parents to participate in Active School Week
	School invites local sports clubs and PA providers to give taster sessions during Active School Week
	School made use of local amenities during Active School Week, such as playgrounds, forest trails etc.

Source: Adapted from (Belton et al., 2020^[194]).

Monitoring, evaluation and impact

Data have been systematically gathered from participating schools, with analysis and evaluation published in three main research papers (Belton et al., 2020^[194]; McGann et al., 2020^[96]; McGann et al., 2020^[196]).

Belton et al. (2020^[194]), conducted an evaluation of ASF after 10 years of operation along five axes: Reach, Effectiveness, Adoption, Implementation, and Maintenance. This evaluation comprised a review of the research, an interview with the ASF programme coordinator, and a pilot evaluation of the impact of ASF participation on children from three schools over 12 months. In this 10-year evaluation of ASF, Belton et al. (2020^[194]) found that the programme has been successful in engaging 46% of primary schools nationally and that students' school-based MVPA increased across the academic year in all schools participating in the pilot study and remained higher than baseline levels at follow up. Furthermore, the increase in MVPA was greater in the schools that fully implemented the ASF, compared to the schools that partially implemented it (although this should not be taken as indication of a control group). Overall, the study concludes that ASF is an effective PA promotion initiative in primary schools in the short-to-medium term. Teachers reported that the programme design allows for collection, processing and use of feedback which helps to continuously adapt the process in line with student needs. Furthermore, the evaluation found that the ASF was effective even in socio-economically disadvantaged schools, where many other health promotion programmes have limited impact.

In 2018-2019, McGann et al. (2020^[196]) used accelerometer and focus groups to measure both the PA levels and attitudes towards PA for children aged 8-12 in four schools in Ireland. They conducted an analysis to compare the impact of two PA programmes: The outcome-oriented initiative *The Daily Mile* (TDM) and the process-oriented ASF on PA levels and perceptions of PA in Irish primary school children. In total, 124 Children wore accelerometers for a five-day period at baseline and follow up (eight months later) and 24 children participated in focus groups across the school year. Two co-educational schools in Ireland were recruited by the researchers at an ASF information meeting held at the beginning of the school year. These two schools were then pair-matched with two other co-ed schools of similar size and from similar locations that were implementing TDM but had never engaged with the ASF process. When comparing the impact of ASF to TDM in these four schools, researchers found that, participants attending TDM schools demonstrated significantly higher levels of PA compared to participants at ASF schools. However, TDM schools showed a significant decrease in PA levels from baseline at the eight month follow up. By contrast, participants at ASF schools showed the opposite trajectory and demonstrated a significant increase in PA levels over the same timeframe (McGann et al., 2020^[196]). Qualitative results indicated that ASF's process-oriented nature also better met children's psychological needs, enhancing enjoyment and motivation towards PA compared to the outcome-oriented TDM. The study concludes that initiatives like TDM are most impactful when part of a wider, coordinated strategy, such as a Comprehensive School Physical Activity Program (see Box 6).

A third study (McGann et al., 2020^[96]) was carried out using a questionnaire and focus groups to deepen the understanding of motivations, benefits, and challenges of teachers and schools faced in implementing the ASF initiative. The questionnaire gathered data from 229 schools at the organisational level, while the focus groups involved 19 individual teachers/coordinators. In terms of teacher experiences, several perceived benefits associated with ASF implementation were reported with a high degree of consensus, including higher quality PE, increased PA, improved student behaviour, and improved academic achievement. However, these perceived benefits have yet to be systematically evaluated or empirically supported (McGann et al., 2020^[96]). For instance, 97.9% agreed that the programme made less-active children more active and 95.3% reported that they saw improved focus and concentration from students. ASF coordinators also referred to an increased awareness of the importance of PA in the school and community, which has connected teachers and the community together in a positive way. Several teachers also reported feeling more confident and competent when delivering physical education.

Bike trains, Portugal⁵

Bike trains (also called bike buses) are adult-guided caravans of children riding their bicycles to school (Bernardino et al., 2023^[197]). These initiatives provide safety in numbers, sheltering children from traffic as well as being a celebration of cycling and a way of demanding more child-friendly cities (Simón-i-Mas and Honey-Rosés, 2024^[198]). Research has shown that the bike train movement has gained momentum globally, with at least 470 initiatives worldwide (Simón-i-Mas and Honey-Rosés, 2024^[198]).

The age at which children learn to cycle varies by country and has evolved across generations. In countries with a higher percentage of people cycling, children tend to learn to cycle earlier than in countries where cycling is less popular (Cordovil et al., 2022). Portugal has a low percentage cycling rate (about 1%) (Küster, 2024) and children in Portugal tend to learn to cycle later, around 6 years of age, compared to children in northern European countries, who start at around 4 or 5 years of age (Cordovil et al., 2022). Children in Portugal are also below the international average in terms of overall PA levels (Pizarro et al., 2023^[199]). These two factors combined mean that initiatives targeting active mobility by bicycle may be an effective entry point for promoting more active lifestyles in the Portuguese context.

At the national level, the Portuguese government approved the [National Strategy for Cyclable Active Mobility 2020–2030](#) in 2019. This initiative supports local programmes that encourage cycling as a primary mode of transportation to schools. However, much of the focus has been on teaching children how to cycle within school settings (Mercê et al., 2023), rather than addressing the broader systemic barriers that hinder active commuting. These barriers include unsafe traffic environments, fear of crime, and car-centric urban planning, all of which significantly deter parents from allowing their children to travel independently (Cordovil, Lopes, & Neto, 2015; Lopes, Cordovil, & Neto, 2014).

At the local level, the municipality of Lisbon launched its School Mobility Programme in 2018, including different strategies aimed at increasing the levels of public transport use, walking, and biking to school in both public and private institutions. These include weekly no-car zones around schools and a yearly survey ([Mãos ao Ar Lisboa!](#)), which provides an annual snapshot of home-school journeys of hundreds of students (Lisbon Municipality, 2023^[200]). *CicloExpresso* is a part of the 2018 School Mobility Programme and is the municipal programme of bike trains (Programa Municipal de Comboios de Bicicletas) in Lisbon. The current *CicloExpresso* is operated by the non-profit organisation *Bicicultura*. It is an extension of a successful pilot programme conducted in 2019, inspired by a citizen initiative started by a father in co-operation with the local council in 2015. Following the 2019 pilot, the initial project scope for the school year 2020-21 was to create bike trains in five schools from distinct geographical settings for children between 5 and 12 years old (Bernardino et al., 2023^[197]). The programme has continued to expand each year. Between March and June 2022, 15 schools were served by 24 routes and had transported almost 1 500 students (Lisbon Municipality, n.d.^[201]). The budget for *CicloExpresso* has also grown, and 2023 had the largest budget since the pilot, with approximately 100 000 Euros for 28 routes by June 2023 targeting students between the ages of 6 and 12, roughly double that of the previous school year (2021/22) (Bernardino et al., 2023^[197]).

Findings from the pilot study suggested that each school could feasibly schedule one journey per week. The municipality initial model relied on professional guides, with specific training to lead the train and ensure the safety and reliability of the service. Community involvement, particularly from parents, was also crucial to provide additional support. However, there was no rigid “one size fits all” approach, and in schools with highly committed parents or local councils, more responsibility could be delegated to them.

⁵ This case study was written with contributions from Professor Rita Cordovil, Faculty of Human Kinetics, University of Lisbon, Portugal.

When the project was expanded in the school year 2020-21, there were two main criteria used to determine the choice of schools for the intervention. Firstly, the context of the school should show strong potential for demand. For that purpose, a preliminary study was conducted, assessing multiple criteria such as existing infrastructure, geographical characteristics, population density, size of the school and the pre-existence of some bicycle use (Bernardino et al., 2023^[197]). The second criterion for choosing the school was diversity, both in terms of geographical and social environment. The underlying goals of this criterion were both the promotion of diversity of access and the ability to test the initiative across different contexts. There was a diversity of infrastructure use, some routes for the first bike trains were almost 100% along dedicated cycling infrastructure while some routes had no bicycle paths at all (Bernardino et al., 2023^[197]).

To benefit from this programme, parents first enrol the child on the Lisbon Municipality website, which forwards the contact information to the *Bicicultura* NGO and the coordinator of the relevant bike train (Urban Mobility Explained, 2023^[202]). The coordinator then contacts the parents to formalise the enrolment. The municipality then procures insurance for that child, and the parent joins an instant messenger group of that bike train. The day before the bike train, the coordinator uses the instant messenger group chat to ask who will participate. This list of students is used so the coordinator knows which children will be at each stop along the route.

Monitoring, evaluation and impact

The city of Lisbon gathers data on the programme through annual monitoring. Furthermore, the *Mãos ao Ar Lisboa!* survey collects information on school journeys. There is ongoing evaluation of each route, including the coordinators and guides' feedback, how the children are evolving, and how the families are changing their behaviour (Urban Mobility Explained, 2023^[202]). However, data from these evaluation and feedback processes are not publicly available. Following the findings of the pilot, bike trains are thought to work best when they are scheduled once per week, usually on the same day, because it helps to establish a routine. Additionally, on days when there is no bike train, children are thought to be more likely to encourage their parents to cycle with them (Urban Mobility Explained, 2023^[202]).

An external evaluation is available for the 2020/2021 programme (Bernardino et al., 2023^[197]). The children that registered for the initiative were 5,6% of the total student population in the selected schools. The number of trips made showed a positive trend, reaching more than 600 by June 2021 and traveling a total of more than 3 200 kilometres combined (Bernardino et al., 2023^[197]). Each circulation of a bike train had on average six children participating and, most of the registered children participated on a regular basis (65% of participants have joined five or more times). Parents also reported strong satisfaction with the service, with 85% giving the maximum satisfaction score possible in surveys. Furthermore, there was evidence of behaviour change in parents, with 65% reporting that *CicloExpresso* was used instead of the car to take their children to school, 77% reporting that their children used the bicycle more often after participating in the bike train and 90% feeling that their child became more capable of autonomously using a bicycle (Bernardino et al., 2023^[197]).

While there is only one publicly available evaluation, monitoring data for additional school years are available on the municipality website (Lisbon Municipality, n.d.^[203]). Between March and June 2022, there were 220 routes implemented, covering 802 km and with 1 465 trips made. In the 2022/2023 academic year, the total number of routes was 372, with 240 children participating and 2 220 trips made. In 2024/2025, the network in Lisbon served 35 schools along 27 routes, supported by 52 trained and paid monitors and involving more than 470 children. The initiative has also been replicated in other municipalities – including Almada, Aveiro, Braga, Matosinhos, Palmela and Oeiras – through agreements with local councils and is expected to expand to additional locations in the coming years (Fialho, 2023^[77]).

A review of the literature covering the case of Lisbon and other bike buses in Europe and North America revealed that teachers, parents, and students emphasised several benefits for these programmes. These

included the promotion of PA, reduced traffic congestion, reduction in pollution, promotion of sustainability, fewer concerns over safety and positive impacts on community cohesion among participants (Fialho, 2023^[77]).

Catalonia's new urban model, Spain

Children in Spain are estimated to be more active than the global average, with around two-thirds reaching the recommended amount of daily PA (Aubert et al., 2022^[15]). However, this overall figure masks important disparities, particularly among children living in built-up urban areas. Barcelona, Spain's second-largest city, suffers from chronic shortages of open space, excessive noise, and air pollution exceeding EU regulatory limits (Amati, Stevens and Rueda, 2023^[204]). In Barcelona, cars occupy approximately 65% of the public space but are the preferred mode of transport for only 25% of journeys, half of which are less than 5 km in distance (Ubalde-López et al., 2023^[205]). Besides its health impacts, this urban design discourages active mobility, socialisation, and street play (Ubalde-López et al., 2023^[205]).

In 1859, engineer Ildefonso Cerdá designed Barcelona's expansion plan based on a grid system of relatively evenly sized blocks as the fundamental morphological unit. However, the Cerdá Plan's implementation paid little attention to proportionally adequate provision of public spaces (Fontes, 2021^[206]). In the present day, the geographical context of the city challenges outward growth, and hardly any areas remain for development, so new public spaces cannot be generated on a large scale. Instead, the city has turned to creative solutions: urban recycling, transformation, intensification and renovation. This case study focuses on three elements of Barcelona's New Urban Model: Superblocks, the Public Space Play Plan Horizon 2030, and the 'Let's Protect the Schools' project (Miquel, 2022^[207]). The elements of the model are interdependent and focus on recovering quality public spaces, pacifying roads and integrating play strategies within city planning.

Superblocks

Urban design in the 20th Century prioritised ownership and operation of the private car over well-being. In the 21st century, many large cities in Europe are trying to move away from this outdated, unproductive and unhealthy model, towards people-centric city models that not only take into account mobility, but also sustainability, liveability and health (Nieuwenhuijsen et al., 2024^[208]). Barcelona's Superblock model is a prominent example of this. The superblock is an urban cell of 16/20 hectares, which seeks to dedicate a maximum amount of space to citizen rights and promoting comfort (e.g. low noise, air pollution, temperature), attractiveness (e.g. diverse and attractive activities and biodiversity), and ergonomics (e.g. accessible and spacious areas) (Rueda, 2019^[209]). Beginning in 2016 with small-scale testing in three neighbourhoods, Barcelona has 31 superblocks in current development, and the plan is to install 503 superblocks across the city by 2030. Superblocks aim to engage citizens to live publicly, reduce pollution, increase safety from vehicles, and to promote sustainable and active mobility via alternative transport (Rueda, 2019^[209]). In this way, they aim to positively impact how children play, move and live.

Superblocks are clusters of urban redevelopment where buildings are connected by car-free pedestrian and bicycle pathways, and each cluster is surrounded by larger, higher speed roads that provide vehicular traffic connections across the wider city (Amati, Stevens and Rueda, 2023^[204]). The initial configuration intended to allow more than the 70% of space previously dedicated to car traffic to be repurposed for movement by foot or bicycle, drastically reducing levels of noise and pollution (Rueda, 2019^[209]). Each cell was formed of blocks of 400 m × 400 m (c. 5 minutes' walking time), with the roads inside the cells providing a local network with a speed limited to 10 km/h and a system of loops allowing car access to each building without allowing through traffic access, as vehicles must enter and exit through a single access route (Amati, Stevens and Rueda, 2023^[204]). The streets within each cluster, known as *green streets*, have

features optimised for pedestrians and cyclists, with trees, plants and infrastructure to encourage outdoor use. For example, in the *Eixample* neighbourhood superblock, there are now 21 green streets (totalling 33km) and 21 squares (totalling 3.9 hectares), which is an increase of 33.4 hectares of pedestrian space and 6.6 hectares of urban greenery (Miquel, 2022^[207]).

Based on lessons learned in the first superblock implementation period (2016-2018), the city of Barcelona slightly deviated from the 'ideal' superblock in its current strategy. One of the key drivers of this deviation was public consultation. While the first implementation of the pilot Superblock project started in September 2016 without any consultation of the residents, the new programme (*Superilla Barcelona*) which is ongoing, is designed with public participation, including from children, and is therefore anticipated to have a higher chance of success. Learning the lessons from the first superblock implementation, subsequent *Superilla Barcelona* interventions incorporated a carefully designed participation process (Tiran et al., 2023^[210]):

- A dedicated website (decidim.Barcelona) for transparency and monitoring
- A steering group made up of neighbourhood actors and city planners
- Community information outings
- A business survey
- Exploratory walks from a gender perspective
- Neighbourhood walks with locals
- Open community workshops
- Open community workshops with planners and architects
- Participatory sessions in schools
- An information campaign for local businesses.

The information gathered during these processes informs an executive plan, which is then presented at the District Council's Neighbourhood Forum for approval prior to the start of works. The aim of the sessions with children was to inform them about the changes that will take place in their neighbourhood and invite them to imagine other ways of appropriating these public spaces.

Barcelona Public Space Play Plan Horizon 2030

The Barcelona Public Space Play Plan Horizon 2030 [henceforth Play Plan] (Barcelona Municipality, 2019^[211]) is the city's first roadmap for putting outdoor play and PA of children among the municipality's key policies. It aims to create a more liveable city and improve the well-being, health and community life of its population. It considers international (e.g. UN SDGs, UN Convention of the Rights of the Child) and Catalan (e.g. Catalan Rights and Opportunities in Childhood and Adolescence Act) policy frameworks to promote children's right to play by providing attractive possibilities for doing physical and playful activity. Furthermore, it aims to support people of all generations to get together in public spaces, so adults can rediscover play and share time and places through intergenerational play.

The Play Plan is a joint initiative of two municipal departments: Ecology, Urban Planning and Mobility, and Social Rights. To inform the development of the plan, these two departments held 24 face-to-face working sessions, involving over 400 people, including council staff, experts, social entities and ordinary citizens, both children and adults, between March and December 2018 (Barcelona Municipality, 2019^[211]). The Barcelona Institute for Children and Adolescents (*Institut Infancia*), a public agency responsible for generating and spreading knowledge to Barcelona's administration, coordinated the development process and prepared the draft plan. A reference forum was set up at the political level, jointly led by two deputy mayor's offices and including the commissioners of the main local policies involved. Two working sessions were also held with representatives of the municipal political groups represented in the City Council representation to present the Plan. The technical work of municipal staff was done in five working sessions,

with relevant municipal staff and expert institutes. Of the 24 working sessions, 11 focused on the public sphere and brought together social organisations, businesses and experts linked to play and public space, as well as individual citizens, both children and adults.

Available data were evaluated to establish the state of play in 2018, and to create monitoring indicators, and develop targets for 2030. In practice this meant gathering detailed information on the city's play areas with regard to their location, surface area, age, type of paving and enclosure and type of playful activity offered in each (Table 3).

Table 3. Recreation infrastructure in Barcelona before the plan

Type of infrastructure	Key findings
Play areas	There were 868 play areas totalling 159 100 m ² and ranging from play areas of 16m ² to 2 281m ² , with an average of only 0.9m ² of play area per child, much lower than the recommended 7m ² of area per child. Although 80% of children aged 0-12 had a play area five minutes' walk from where they live, only 32% offer the three main motor-skill play activities (sliding, climbing and swinging). There was not a single public space play area designed for 13- to 17-year-olds and only 25% of play areas were accessible or had equipment certified as inclusive. Only 18% of play areas had a drinking fountain within 50m. Only 11% had at least one piece of equipment for collective play.
School playgrounds	School playgrounds were poor in terms of their spaces, design and facilities. Only 30% of schools in the city had playgrounds that are suitable in terms of playability, gender and sustainability criteria, or which are undergoing alterations.
Leisure areas	There were 326 green spaces in the city, which cover 496.56 ha and 78% of them had a play area but only 8% had public toilets.
School surroundings	School settings were often found to be places for spontaneous play, but with little planning, and they were sometimes found to be hostile (e.g. with high traffic density by school entrances)
Streets exclusively for pedestrians	Around 60% of public space in the city was allocated to wheeled transport and on-street parking although the number of streets and areas where pedestrians have priority doubled in the last ten years.
Outdoor sports spaces and equipment	Barcelona had 313 sports activity areas. Including 7 skateboarding and skating rinks and 4 urban sports parks between 1 000 and 3 000 m ²
Natural surroundings	Barcelona's urban beaches occupy 26.7 hectares. Besides being places for bathing, they allow children to play different games, such as flying kites or various sports (football, volleyball, beach tennis, etc.)

Source: adapted from (Barcelona Municipality, 2019^[211])

The Play Plan is made up of 3 core strategies, 14 objectives, 10 measurable targets and over 60 specific actions focused on three themes: *play areas and school playgrounds*; *playful spaces and school surroundings*, and *playable city*. The interventions aim to improve the quality and outdoor play by growing the number of options and creating more diversity in their design (e.g., through more inclusive spaces, more opportunities to engage with nature, and intergenerational opportunities). An important part of the quality framework is centred on providing places for meeting up and community interaction, as well as enhancing safety. Budgets associated with implementation amount to almost EUR 60 million until 2030.

Box 11. Urban re-design for accessible play areas, Barcelona.

The framework put forward in the Play Plan supported the *Eixample* district of Barcelona to create a new fully accessible children's play area in the *Jardins de Montserrat Roig*, located inside a block between *Carrer de Provença* and *Carrer del Rosselló*, in the *Sagrada Família* neighbourhood.

The new area incorporates swings, a trampoline, a slide with a transfer platform for wheelchairs, a sandpit with a table, and recreational panels. Overall, these elements are designed for different ages,

abilities, and all recreational activities are accessible. The perimeter fence has been removed to encourage children to play freely throughout the space, the play space has been organised in two areas, one dynamic and one quiet.

The colours of the pavement in the play area have been expressly selected to suit those with visual disabilities and the walking space that leads to the different play spaces has been expressly marked in order to favour the orientation of children and adults. All these criteria aim to make a more inclusive play space.

The renovation of the children's play space of the *Jardins de Montserrat Roig* is one of the winning projects of the Participatory Budgeting programme in *Eixample*, where residents aged 14 and up can submit and vote on citizen proposals. The investment for the whole action is approximately EUR 240 000.

Source: (Barcelona Municipality, 2024^[212])

“Let’s Protect Schools” project

In Barcelona, the government of Catalunya is responsible for the management of the public-school network, and the municipality of Barcelona is responsible for the surrounding public spaces, such as sidewalks and roads in the immediate surroundings. In 2020, Barcelona Municipality launched the “Let’s Protect Schools” (*Protegim Les Escoles*) project, a city-wide network of micro-interventions complementing existing actions from the Superblocks and Play Plan. Barcelona has 585 children’s educational centres, and the programme has several objectives (Barcelona Municipality, n.d.^[213]):

- Increasing road safety through pacification of traffic on the streets
- Developing new urban furniture to improve habitability and improving environmental quality with more green areas
- Improving access and security elements
- Creating spontaneous play areas

Unlike the two previous initiatives, the project is primarily top-down, initiated and managed by the municipality, with micro-interventions designed by technical experts. However, the school community is invited to participate through working groups where it can present demands (Fontes, 2021^[206]). The traffic pacification includes actions to reduce the space allocated to vehicles, speed reductions, and the creation of chicanes and additional road safety elements (signage, fences, bollards), improved lighting, and recruitment of volunteers for traffic control during school hours. To improve habitability, schools’ entry and exit points are given small squares of ten metres in diameter with benches, flower beds, and other urban furniture intended to promote safe and spontaneous children’s play. The municipal government encourages schools to participate in the improvement and maintenance of these squares, strengthening ties between the educational community and public space (Fontes, 2021^[206]).

Monitoring, evaluation and impact

Superblocks

The municipality of Barcelona is assessing many indicators to monitor progress. These include characteristics of the built environment on a micro-scale that influence walkability and PA, as well as well-being indicators and health-related behaviours. However, none of these indicators specifically focus on children (Tiran et al., 2023^[210]). The Urban Ecology Agency of Barcelona evaluated the initial pilot areas using a sustainability framework, which included mobility, public space, biodiversity and diversity of

economic activities, proximity to services among others. However, no behavioural, environmental, or health monitoring was included. Following criticism, Barcelona Municipality commissioned the Public Health Agency of Barcelona (ASPB) to evaluate additional health and health effects indicators (Nieuwenhuijsen et al., 2024^[208]). Evaluation of individual superblocks is a challenge, since the presumed health impacts would accumulate at scale. Hence, there have also been simulations of the impact, in addition to an impact evaluation (Nieuwenhuijsen et al., 2024^[208]). There remains a need for more longitudinal studies in Barcelona and other places where superblocks are implemented.

Increasing PA in childhood one of the desired health outcomes, alongside reducing harmful environmental exposure (e.g. noise, heat, pollution), and increased access to green spaces (Mueller et al., 2020^[214]). Several recent studies sought to understand the impact of the superblocks. Qualitative studies highlighted the differences between superblocks and the impact these differences have on their use. Not all superblocks provide the same amenities, affecting their potential impact on PA. For instance, some superblock playgrounds remain empty, since they do not provide shade for the equipment, rendering the metal slides too hot for children to use comfortably (Quintana Vargas, 2024^[215]).

In the first study assessing citizens' use of the Barcelona Superblock for PA, Puig-Ribera et al. (2022^[216]) observed that the development of the superblock did not automatically lead to an increase in PA among residents. Teenagers and senior citizens were the demographics that visited superblocks least frequently and reduced their use the most over one year. Overall, over the course of the one-year observational comparative study, the impact of changes in the built urban environment of Barcelona resulting from the superblock model were limited in terms of PA.

In 2021, ASPB evaluated the environmental and health effects of the superblock transformations in three neighbourhoods, using a mixed (quantitative and qualitative) method study (ASPB, 2021^[217]). It reported that, while families with children do consider the superblocks as spaces that allow more comfortable mobility, there is still too much traffic. In one of the superblocks (*Poblenou* neighbourhood), study participants reported that families with children (and especially women) use the superblock the most, while children and young adults feel that the space is not designed for them. Very few people use superblocks for vigorous PA, and significantly increasing PA opportunities in superblocks requires the creation of specific areas that target different age groups. Puig-Ribera et al. (2022^[216]), suggested that a special emphasis on senior citizens and teenagers was specifically needed. Overall, superblocks provide a strong foundation for further targeted action on children's PA, but additional policies are needed to achieve meaningful increases in activity levels.

The Play Plan

The 2018 diagnosis activity (see page 50) informed the development, implementation and indicators of the Play Plan, and established its ongoing monitoring. In 12 months of operation (October 2021-October 2022), over 7 000 user families completed surveys (Institut Metròpoli, 2023^[218]). Ultra-Wideband bracelets were worn by approximately 900 children to track the dynamics, trajectories, and play time (Institut Metròpoli, 2023^[218]). In addition to surveys and movement bracelets, data loggers have been installed on the slides of some play areas to understand how the temperature affects play and support improvements in the thermal comfort of these areas and their play elements (Institut Metròpoli, 2023^[218]). This innovative monitoring approach allows the municipality to analyse the usability of each play area, users' perceptions, and future needs.

Data from 2022 show that the Play Plan has more than doubled the number of very large play areas (up to 12) and resulted in over 200 renovations or plans for new play areas (Barcelona Municipality, 2022^[219]). The Play Plan has more than tripled the number of accessible play areas (to 78) and reclaimed more than 100 hectares of space previously allocated to private cars. It has provided 50 locations in the city which have been provided with games (e.g., mobile games kiosks, game loans, and temporary games spaces).

A “0-99 years” games area has been created to stimulate intergenerational play, 90 kindergarten playgrounds have been publicly opened to all families and children, and 58 school playgrounds and 31 patios were improved to provide options for playing with water in the summer. A core strength of the plan is the incorporation of co-creation, including children in the transformation of the city. This co-creation spans across development, governance and implementing actions. This process ensures children are integrated into the urban design process for of play spaces, where the expertise of children is recognised and placed on the same level of importance as that of adults (Institut Metròpoli, 2023^[218]).

An evaluation of the Plan for Play in Public Spaces was scheduled for publication in 2024 but is currently not publicly available. It is anticipated to contain a more in-depth evaluation of changes regarding play in public spaces and of tangible impacts of the plan on the play practices of children.

“Let’s Protect Schools” project

One of the challenges with micro-interventions such as those undertaken in the *Let’s Protect Schools* project is the lack of a robust methodology to evaluate impact of singular small actions on such a large scale (c. 600 actions) (Fontes, 2021^[206]). However, with small-scale interventions, even modest impacts can yield worthwhile returns on investment. After 11 months of operation, the project has been deployed in around 200 schools, generating around 3 500 m² of new public spaces for pedestrians in the school surroundings (Fontes, 2021^[206]; Barcelona Municipality, n.d.^[213]).

An impact evaluation was carried out for the period 2021-2023 (Ubalde-López et al., 2023^[205]), comparing schools that received the intervention with control schools in similar settings where no actions were implemented. The study recorded observations and perceptions in the morning (10:00-12:00) and late afternoon (17:00-19:00). Overall, schools that received the intervention in 2022-2023 saw an increase in the number of children playing (increase in street play of +91%), both alone and in groups. In contrast, in the control school, a general decrease (-28%) was observed. On average, there were 12 fewer vehicles recorded in the intervention schools and 3 more people using the public space, as well as a 20% increase of girls playing. The reduction of motorised traffic around the intervention schools was also found to promote an increase in both PA and social relations among children, especially in girls.

Daughters and Dads Active and Empowered, Australia

Research in the Australian context indicates that parental encouragement for children to be physically active is high and parents often report being active with their children (Hesketh et al., 2023^[220]). Despite this, roughly 80% of children and parents in Australia are estimated to not reach the recommended amount of PA per day (Hesketh et al., 2023^[220]). This suggests that that parental encouragement alone is not enough to ensure children meet recommended activity levels. The role of families and parents is often acknowledged as crucial for the effectiveness of PA interventions [e.g. (Silva et al., 2024^[221])]. However, there literature reviews have identified a lack of family-based PA interventions (Brown et al., 2016^[222]). [Daughters and Dads Active and Empowered](#) (DADAE) is an initiative of the Centre for Active Living and Learning at the University of Newcastle, Australia. This intervention strengthens the relationship between fathers/father-figures and their daughters through PA, empowering both with the knowledge and skills to combat gender bias (Ashton et al., 2024^[223]). The rationale behind focusing on fathers is that parent-child interventions often target and engage mothers, but when programmes are open to both parents, fathers tend not to participate (Daughters and Dads, n.d.^[224]).

The DADAE intervention supports fathers to role model positive behaviours and promote PA for their daughters, and vice versa. It leverages fathers (or another significant male figure if the father is not in the daughter’s life) as the agents of change to improve their daughter’s PA levels, sports skills and social and

emotional well-being. The intervention is currently focused around five concrete programmes: The original 'multi-sport' programme, which provides the foundation for key sports skills (kick, catch, bounce, strike, overhand throw, underhand throw) as well as four sport- focused variants (cricket, football, cycling and basketball). The sessions are designed to provide evidence-based parenting education, opportunities for rough-and-tumble play, and development of sports skills and fitness.

The intervention cycle is 9 weeks long, with one session per week and is limited to 25 families per cycle. The sessions are held at a local venue with suitable facilities to undertake the educational and practical components (such as a school). Each weekly session includes three components; a 15 minute education portion with fathers and daughters together covering important social-emotional constructs (e.g., self-control, persistence, resilience, kindness, bravery, positivity, critical thinking, self-reliance); a 30 minute education portion for fathers and daughters separately, covering parenting strategies (for instance around social-emotional skills and digital technology use) and; a 45 minute practical portion with fathers and daughters together, focused on rough-and-tumble play, fine motor skills, and fitness activities. To enhance overall family support, mothers/partners and siblings may be invited to participate in the activities of one of the sessions. Each week, participants are provided with home-resources (a Father's Logbook, a Sport Skills Booklet and a Daughters' Booklet) to learn about and document home-based tasks and activities. To enhance participants' sense of autonomy, competence, and self-efficacy, the intervention provides them with choice and control over multiple options for completing activities and home tasks. It encourages fathers and daughters to choose challenges that lead to success, regardless of age, fitness, or skill level.

Monitoring, evaluation and impact

The DADAE intervention has been the subject of several evaluations of different aspects of its impact. A randomised controlled trial (RCT) was first conducted by the research team to assess the delivery feasibility of the intervention and establish its efficacy (Morgan et al., 2019^[225]). In addition, an evaluation of the impact on social and emotional well-being was published (Young et al., 2019^[226]) and a follow up qualitative study was also conducted in which participating fathers were interviewed (Pollock et al., 2020^[227]). The intervention's effectiveness was then tested in real-world settings, where it was delivered by trained facilitators and tested using another RCT research design (Morgan et al., 2021^[228]) which measured the impact on PA and social and emotional skills (Pollock et al., 2023^[229]). Finally, a 12 month follow up study was implemented, to test the long-term impact of the intervention (Ashton et al., 2024^[230]).

The two RCT studies, qualitative analysis and observational data have all demonstrated strong feasibility and positive impact of the intervention, which improved father/daughter PA levels, co-PA, parenting skills/practices and father-daughter relationship quality including involvement and engagement with daughters. They also showed improvements in social-emotional well-being, as well as increased co-parenting, healthier family relationship dynamics, and deeper knowledge and understanding of gender stereotypes and gender bias. Significant effects were also identified for daughters' fine motor skills, a range of fathers' PA parenting practices, and screen time for daughters and fathers. Effectiveness of the DADAE intervention was confirmed in community settings when delivered by trained facilitators. Long-term findings confirmed there were significant sustained effects on PA and social and emotional outcomes in both fathers and daughters at 12-months, but not on screen time. Fathers in this study increased the days per week reaching PA recommendations by 27% at 10-weeks and by 19% at 12-months, compared with baseline. Likewise, for daughters, there was a significant increase by 25% at 10-weeks and by 14% at 12-months when compared to baseline (Ashton et al., 2024^[230]). Fathers also increased days/week participating in co-PA one-on-one with their daughter by 114% at 10-weeks and by 50% at 12-months compared to baseline.

The promising results from these evaluations enabled the DADAE initiative to secure approximately four million AUD in funds, including a 2.4 million AUD grant from the New South Wales Office for Sport to develop the sports-specific programme variants (Morgan et al., 2023^[231]). These variants were developed in collaboration with state-wide sports organisations, such as Cricket New South Wales and Basketball

New South Wales. In the UK, a successful pilot was run in 2019 through the NGO Women in Sport, which has resulted in a scale-up of the DADAE programme in partnership with various sports organisations, such as football clubs and delivered in school facilities to girls aged 5-11 years (Women in Sport, n.d.^[232]). In Austria, the DADAE programme has been organised since 2022, with the latest cycles coordinated by the Viennese Sport Union in 2024 being fully booked (SportUnion Wien, n.d.^[233]).

The research centre delivering the DADAE programme has also formed a partnership with the University of Newcastle teacher training institute to introduce a work-integrated learning model for pre-service teachers. Since its introduction, the model has provided hundreds of student teachers with experience delivering the intervention through an approved university course.

Gender-inclusive urban design, Sweden

Sweden performs well when it comes to accessible public facilities for children. For instance, 99% of 0- to 15-year-olds living in Swedish urban areas have access to green space within 300 metres of their home and 99% of 12–18-year-olds report feeling safe or quite safe outside where they live during the daytime (Löf et al., 2022^[234]). However, Swedish children face significant gender disparities in terms of PA levels, physical fitness and use of public space and girls tend to use playgrounds, football fields, skate parks and other public amenities less than boys (Sandström, Ericsson and Hedvall, 2024^[235]). This challenge is not unique to Sweden, but the country became a prominent site for the development of gendered design processes and gender-sensitive policies aimed at strengthening girls' place attachment and encouraging them to use public spaces for socialising and PA (Sandström, Ericsson and Hedvall, 2024^[235]). Most municipalities in Sweden now recognise the importance of working with women and girls in urban planning (Selberg, 2022^[236]). These initiatives are mostly centred on promoting dance, performance and spontaneous PA. A list of seven initiatives can be found in Table 4. The present case study will explore the development processes for three of the practices: Rosens Rod Matta, Frizon and Dansbana.

Table 4. Gender mainstreaming initiatives targeting girls in Sweden

City	Name	Year	Description
Malmö	Rosens röda matta (The Red Rose Carpet)	2013	Between 2011 and 2013, a large redevelopment project (<i>Rosengårdsstråket</i>) was implemented, to better connect the disadvantaged suburb of Rosengård with central <i>Malmö</i> . As part of the project, an under-utilised parking lot was scheduled for development into an activity space. A mapping on the use of public space among youth in Rosengård found that local girls do not use the public spaces in the area (Listerborn et al., 2014 ^[237]). Creating public space for young girls, a group that did not feel welcome in the existing public spaces, became the objective for the new space (Listerborn et al., 2014 ^[237]).
Umeå	Frizon (Freezone)	2016	<i>Umeå</i> has a long history of gender equality work, starting in 1989 with the establishment of a gender equality officer in the municipality. In 2016 <i>Frizon</i> was opened. It is a fusion between a sculpture, social seating zone and an aesthetically designed public space with electrical outlets, WiFi and speakers for playing music. Since girls are underrepresented in dialogues around urban development projects in public spaces, the area was designed with different groups of girls aged 15-20. Intended as “a place for everyone but designed for a specific group”, the backrests in the large swings in <i>Frizon</i> are designed for a person who is 1.65 metres tall (the average height of a woman in Sweden) (Umeå Municipality, 2019 ^[238]). The structure is placed inside a popular park, so the girls see the incoming users, providing a feeling of safety for the girls.
Three permanent sites: Huddinge (Sweden) / Södertälje (Sweden) / Istanbul (Türkiye) + several temporary sites	Dansbana! (Dance pavilion!)	2016+	<i>Dansbana!</i> is an organisation founded by architects Anna Fridolin, Anna Pang and Teres Selberg in Stockholm. It designs public places for dance in collaboration with young women aged 13-19 who are generally underrepresented in their use of public space. Dance is particularly popular among this demographic. Hands-on methods are used to engage girls and local dance organisations in the design, construction and maintenance of the spaces in collaboration with local municipalities. The precise designs vary, but all spaces have a dance floor and an interactive built-in sound system to encourage spontaneous dancing.

Skarpnäck	Flickrum - Places for Girls	2017	This is a participatory bottom-up dialogue process organised by an architecture firm and involving the desired end users of public spaces, adolescent girls. The dialogue was a way of shaping public spaces that are truly inclusive. It involved a play, a participatory citizen dialogue, an exploratory walk, a collaborative workshop and an exhibition (Sandström, Ericsson and Hedvall, 2024 ^[235]).
Jönköping	Kepsen (The Cap)	2020	From 2016 to 2020, the art and architecture group MYCKET worked together with the dance group Mix Dancers and civil society actors to build a dance pavilion in the shape of a giant cap, aimed at making girls feel more welcome in public spaces. It has a solid wood dance floor, various lighting (e.g. spotlights), a built-in sound system and five free-standing mirrors for dance classes. The lawn around has been shaped on an incline, with benches and tables. The cap is aimed at the school and city hall, which contains a library, swimming pool, leisure and community spaces (Public Art Agency Sweden, n.d. ^[239]).
Stockholm	Trissans hjärta (Tristan's Heart)	2020	Co-designed with a focus group of young girls from the area, Trissan's heart is a spontaneous activity area designed as an alternative space for play, near a ball field on the site, which is mainly used for organised sports activities by boys and men. The task was to create new and alternative opportunities for PA that seem inclusive and attract a wider target group (Sandström, Ericsson and Hedvall, 2024 ^[235]).
Gothenburg	SPEG-LING (mirror)	2021	The park and surrounding wooded hills have been renovated to create a playful place for spontaneous sports, exercise and PA, with a clear perspective on inclusion and gender equality, where the needs of young girls were placed centre stage. The park has several multifunctional areas for spontaneous sports and dance, with a focus on attracting more girls to PA (Sandström, Ericsson and Hedvall, 2024 ^[235]).

Source: Author's elaboration based on sources cited in table.

The *Rosens Rod Matta* was originally an under-utilised parking lot, later turned into an activity space with a focus on dance and performance intended primarily for girls, giving this target group true influence and responsibility over the design of the space. A group of local girls were employed by the public planning authority as summer interns to plan the project, including problem-setting, idea generation and designing a proposal as well as engaging other girls to get involved in testing through the organisation of workshops and music and dance events. The girls were recruited in schools and through an association that promotes girls' active participation in civil society. The planning continued across a second summer, with new interns being employed and further testing taking place on site, together with local associations and other actors. After the activity space was inaugurated, a group of active users was established to plan a programme for the space, including budgetary allocation in formal co-operation with the municipality (Listerborn et al., 2014^[237]).

Frizon combines sculpture, social seating and an aesthetically designed public space with electrical outlets, WiFi, and music speakers. It is an initiative intended to address the underrepresentation of girls in public activity spaces. In 2016, *Umeå* municipality partnered with a group of local adolescent girls to develop one of its city parks into a more welcoming space. The design and development of the park was done through a practice of "inclusion through exclusion" - including only young girls in the dialogue and excluding everyone else. The planning workshops focused on dance, photography and other artistic expressions, where participants were encouraged to imagine freely, unconstrained by technical or budgetary limitations and societal expectations. Each workshop was built around discussions on a different topic, developed in collaboration with an interdisciplinary team at the university of *Umeå*. In addition to these workshops, internal learning seminars were organised within the municipality, to discuss with researchers and elected officials how to build a gender equal city (Isha and Raheja, 2022^[240]).

The name *Dansbana!* follows the tradition of public dancing spaces, which were common in Sweden and elsewhere in the early 20th Century. The *Dansbana!* initiative designs public places for dance in collaboration with young women aged 13-19. It follows a design and installation process combining conventional architectural techniques, such as site analysis (i.e. observing the flow of people, as well as physical and social aspects), with interdisciplinary sessions of consultations, prototyping and test-dancing together with the target group of users – young girls (Selberg, 2022^[236]). The typical timeline from the first

workshop to the completion of a *Dansbana!* is one year. In the initial design workshops, participants were invited to play their favourite music on a portable speaker, while facilitators danced alongside them to foster a sense of equality. For some workshops, professional dancers were invited to teach easy steps or a choreography. Approximately halfway into the project, a feedback session gathers further input to the design process and create a sense of shared ownership and belonging to the process. At the inauguration of a new *Dansbana!*, A launch event is hosted in collaboration with the commissioning municipality or cultural institution. Typically, these events feature a dance group of young girls to perform a show, followed by several short dance classes exhibiting different types of dances (e.g. breakdance, baroque dance, capoeira, swing) (Selberg, 2022^[236]). The launch events serve an important function in claiming the space as a place for dancing. An online booking system is used to manage the space and facilitate different organisations to plan outdoor courses and workshops. Key aspects, such as size, location and amenities, are discussed and investigated on site together with future users. For instance, during consultations on the *Dansbana!* in Huddinge, many of the participants were practising Indian dances, which use bare feet stomping on the ground. By contrast, in *Dansbana!* Södertälje, the local girls were dancing contemporary and jazz styles and wished to move with their whole body close to the ground. Because of these differences, a hard wooden surface was selected for the floor in Huddinge, whereas in Södertälje, a softer rubber floor surface was used (Selberg, 2022^[236]).

Monitoring, evaluation and impact

Although Sweden has many promising cases of public spaces designed with girls in mind, the number of initiatives is still very small compared to the overall population of girls in Sweden. There is no publicly available systematic monitoring system assessing such initiatives. Hence, the actual impact on PA levels is unknown but almost certainly negligible at the national level. However, the cases have a strong value-based (i.e. citizens, regardless of age or gender, should feel comfortable to use public spaces) and psychological (e.g. place attachment theory) rationales. Furthermore, they exhibit positive immediate outcomes and impacts on planners, designers, municipal workers, and local girls. These initiatives are now examples that can serve as blueprints to undertake cultural change around city planning, urban design, and fill gaps in knowledge on how to plan and design public places in ways that correspond to young girls' needs and preferences (Podestà, 2023^[241]). Observations show that girls are more likely to use these spaces when activities are programmed to encourage their participation. The spaces for *Speg-ling*, *Dansbana!* and *Kepsen* can all be booked, which makes them different from most cities' shared and public spaces (Sandström, Ericsson and Hedvall, 2024^[235]). Evidence from *Dansbana!* shows that having more programmed dance sessions is typically associated with more spontaneous dancing outside of programmed times as well (Selberg, 2022^[236]). More research and evaluations on the impact of gender-inclusive urban design processes is sorely needed.

Healthy movement for children, Austria

The 2022 Health Behaviour of School Aged Children (HBSC) ,which assess PA levels of children across 51 countries) reported that children aged 11 in Austria are estimated to be more physically active than the average (HBSC, 2023^[242]). However, by the ages of 13 and 15, Austrian children's activity levels drop to levels similar to the international average. The *Kinder Gesund Bewegen* [Healthy Movement for Children] initiative was launched in September 2009 and has since become one of the largest health promotion initiatives for children and adolescents in Austria (Steinbach, 2014^[243]). Funded by the Austrian Federal Government, and initially covering kindergarten and primary school, the programme has gone through several iterations. *Healthy Movement for Children* I and II, which ran from 2009 to 2018, was merged with *Daily Movement and Sports Unit* project under the *Healthy Movement for Children 2.0* programme in 2019.

Since the 2024/25 school year, it is an integral part of *Die Tägliche Bewegungseinheit* [Daily Movement Unit] programme, working in pre-primary, primary and secondary level.

The goal of the programme is to offer children opportunities to participate in exercise and sport in a diverse, fun and joyful way to motivate them to engage in lifelong PA. It does this primarily by funding partnerships between schools and local sports organisations. The goal of the programme is to reach as many children as possible, regardless of ability and social/cultural background, to inspire them to engage in PA. At the core of the programme are free exercise opportunities offered through educational institutions, but delivered by qualified external instructors and local sports clubs, who are members of the three recreational sports associations (ASKÖ, ASVÖ, and SPORTUNION). The programme operates across three pillars of action:

- Movement culture – making exercise and sport an integral part of everyday kindergarten, primary and secondary school life
- Movement units - expanding the range of exercise in kindergartens and primary schools with additional exercise units
- Variety of movement - raising interest in exercise and/or sports training through tailored offers in kindergarten, primary and secondary schools.

Each week, in both kindergarten and primary schools, movement coaches (Box 12) organise an additional movement lesson for each class and sports clubs offer a variety of exercise sessions to encourage children to participate in sports, including swimming lessons to promote water skills. These additional units are also intended to provide educators with inspiration for designing their own physical education classes.

Table 5. A typical week in...

Kindergartens	Primary schools	Secondary schools
One additional movement unit	One to two additional movement units	One or two additional movement units
Three to four active morning circles	Two to three exercise and sport teaching units	Two to three exercise and sport teaching units
Three to four gymnastics units	Six to seven active breaks	Two to three active breaks
Five to six sessions of indoor movement games	Five sessions of active learning	One to two sessions of active learning
Six sessions of outdoor movement games	Four to five times active travel to school	One to two times active travel to school

Source: (Teufl et al., 2024^[244])

The programme uses a mobile application (Gibmir5), which is available free of charge to all participating classes, and records the exercise and sports activities carried over the week for each class. Classes and educational institutions can earn points for the additional activities recorded, which feature on a leaderboard. In the programme's second pilot year, the leaderboard facilitated competitions offering prizes such as sports equipment and tickets to three circus and movement festivals held at the end of the school year (Teufl et al., 2024^[244]). Participating clubs are mainly leisure- and community-oriented, reflecting the programme's focus on broad participation rather than competition (Steinbach, 2014^[243]). As part of the programme, professional development courses are also offered to teachers. For example, ASKÖ offers free training courses for kindergarten and elementary teachers, equipping them with resources to incorporate more physical activity into children's daily routines (Teufl et al., 2024^[244]).

Box 12. The Role of Movement Coaches

Movement coaches are specialists in promoting fun and joy in PA for children and adolescents in kindergarten and school, as a supplement to teachers. Movement coaches must be certified to conduct movement units in kindergartens and schools. They are trained to conduct movement sessions in various settings, using diverse materials, tailored to different age groups, incorporating playfulness and varying levels of difficulty. They place special emphasis on engaging children with lower activity levels, encouraging them to become more active. Additionally, they serve as a link between educational institutions and sports clubs, fostering the development of both.

The training structure was standardised by *Sport Austria* in 2020 and has a uniform scope, content, course materials, examination system, and price regardless of provider. The training is based on a basic module with non-sport-specific content and a specialised module with sport-specific information. When both modules have been successfully completed, the certificate is issued.

Source: (Teufl et al., 2024^[244]; Sport Austria, 2025^[245])

Monitoring, evaluation and impact

Since its launch in 2009, the programme has been evaluated externally. This includes two comprehensive evaluation reports (published in 2012 and 2014) as well as several internal summaries of progress. Following the merger of the programme into the Daily Movement Unit, two evaluation reports were published for the first two pilot years of the newly merged programme (2023 and 2024). These evaluations used a project barometer, score card, and online questionnaires to survey participants. The PA of children was recorded using movement diaries; movement coaches recorded their experiences in a journal; and teachers used the Gibmir5.app application to track sessions. Importantly, the evaluations were supported by a theoretical framework based on an impact model developed jointly with the implementing sports organisations. This model outlines the measures, objectives, and desired impacts of the programme and how they relate to each other.

The evaluations showed that this programme has become one of the largest health promotion initiatives for children and adolescents in Austria, with 94% of all primary schools and 77% of all kindergartens participating in the programme at least once (Steinbach, 2014^[243]). The data from the exercise diaries also suggested that children with identified movement deficits engaged, on average, in 0.5 hours more moderate-to-vigorous PA per day in the second pilot year (Teufl et al., 2024^[244]). Nine out of ten educators from participating kindergartens and eight out of ten from participating schools reported that children who had taken part in the additional exercise units had made progress in their motor skill development (Teufl et al., 2024^[244]).

Participating sports clubs reported that they benefit from the strengthened co-operation with educational institutions, and around two-thirds of the participating clubs reported that participation has resulted in an increased number of club members or participants (Steinbach, 2014^[243]). In the 2023/24 school year, more than 650 sports clubs across Austria were involved in this programme (Teufl et al., 2024^[244]). Across 15 years of operation, over 4 000 movement coaches have been brought into action and almost 90 percent of educators perceived the movement coaches to be very well prepared, motivated and competent. Overall, the programme makes an important contribution to the promotion of PA, especially among children who are the least active (Teufl et al., 2024^[244]).

Temporary play streets, UK

By treating playgrounds as the only places where children can play, society reinforces the harmful idea that children have no place in other public spaces. At the same time as children are discouraged from playing where they live, their independent mobility has also declined, limiting their ability to travel to alternative spaces. In 2010, it was estimated that English primary school children made less than half the number of unaccompanied weekend journeys compared to English primary school children in 1971 (Shaw et al., 2012^[246]). Across a similar time period, the proportion of households in Great Britain with access to one or more cars increased from 52% in 1971 to 78% in 2022 and the proportion of households with two or more vehicles has increased from 8% to 34% (Bhagat et al., 2024^[247]). Like many OECD countries, the UK is heavily dependent on private cars, with much public space devoted to driving. This restricts children's right to move and play, while encouraging inactive lifestyles (Hyde, 2024^[145]). Less than half of English school-age children between 2017 and 2021 reported meeting the recommended amount of MVPA per day (Active Healthy Kids England, 2022^[248]). Children in England increasingly tell adults that they want spend more time in their local area but “are frequently being given the message that they, and their play, are not welcome” (Play England, 2023, p. 2^[249]).

Temporary re-prioritisation of streets outside schools or along residential roads is a powerful tool for unlocking more opportunities for play and for creating safer community and open spaces for play closer to children's homes (Hyde, 2024^[145]). Although playing in local streets offers an opportunity to improve well-being in children, the space where that play could occur has become progressively less accessible compared to previous generations (Play England, 2016^[250]). Temporary play streets refer to neighbour-led short road closure initiatives, creating a safe space for children to play freely together on their doorstep. Temporary play streets align with Brussoni et al.'s (2012, p. 3134^[251]) approach of “keeping children as safe as necessary, not as safe as possible”. This approach aims to support the development of the physical, psychological, social and cognitive aspects of movement as a PA by providing the opportunity for different kinds of spontaneous play, high intensity PA and manageable risk (Play Australia, 2020^[252]). One of the most prominent temporary street play closure models is the *Playing Out* model, developed in 2009 on one street in Bristol, UK. The model has since become a national movement, with broad connections to similar initiatives worldwide. The key features of the *Playing Out* model are:

- Legal, safe and resident-organised closures of roads to through traffic
- Short but regular road closures (most sessions only last 1-2 hours)
- Free, simple, unstructured and child-led play
- An inclusive approach to neighbour consultation
- Stewarded by residents
- Car access permitted to residents, provided that they drive at a walking pace

The *Playing Out* model relies primarily on local residents to organise the temporary play streets. Its continued popularity indicates that many residents have a strong desire to create car-free space in their local area (Playing Out, 2023^[253]). The whole process, from ideation to the first road closure session, takes around 2-3 months (Playing Out, 2022^[254]). It takes at least one resident to start the initiative, invite neighbours to an informal meeting to discuss, and then follow up to set dates and decide on roles and responsibilities. There are three main roles in the *Playing Out* model: Organiser(s), Safety Stewards and General Helpers.

Following the informal meeting, the organiser(s) need to approach the local authority, to seek approval for the temporary closure of the road. The recruitment of stewards (at least two for each vehicle access point throughout the session) and other volunteers also takes place around this time. The organiser(s) will then receive potential objections and concerns from local residents, connect with the wider network of temporary play streets using social media, perform a risk assessment, publicise and promote the road closure event

(using letters, posters, flyers), secure methods of signalling and blocking the road (e.g. using signs and cones), inform/ invite the local police, encourage parents to bring toys and games outside, and take photos (with permission) (Playing Out, 2022^[254]).

The street must be suitable (i.e. not a busy road or a location that would block public transport access) and potential physical risks to posed by features of the street. risks (e.g., steep hills, blind bends, wide junctions, side streets or narrow alleyways) must be minimised. This is generally done by carefully choosing the most appropriate section of the road and closing smaller sections at first to trial the approach.

Monitoring, evaluation and impact

Having evolved from an informal residents' initiative, *Playing Out* is now a Community Interest Company, which serves as a platform for information, advice and support to other temporary play street initiatives nationally and internationally. The *Playing Out* platform regularly collects data and feedback from municipalities, research centres, local stakeholder groups and play streets organisers (e.g. through national surveys in [2017](#), [2019](#), [2021](#) and [2023](#)).

By August 2024, over 1 650 street communities implemented the *Playing Out* model across the UK, directly involving 50 000 children and 25 000 adults. Most of these streets had at least 12 sessions a year. On average, most UK *Playing Out* temporary play streets have between 10 and 20 children playing. However, almost 1 in ten have over 30 children. Over 100 municipal governments are now actively supporting the temporary play streets with specific policies (Playing Out, 2023^[253]). The *Playing Out* platform has offered support and advice to other similar initiatives in Australia, Belgium, Brazil, Canada, Croatia, France, Germany, Greece, India, Ireland, Italy, Japan, Mexico, New Zealand, Norway, Portugal, Romania, South Africa, Spain, Türkiye and the US.

More broadly, temporary play streets have been the subject of numerous studies and evaluations. A review of the international research base (Play Australia, 2020^[252]) concluded that they have several concrete benefits for children. They encourage outdoor participation, and children who spend more time outside tend to be more physically active. Participation can support children to develop their identity and feel a connection to where they live and who they share local places and spaces with. The unstructured nature of temporary play streets also provides children with the opportunity to improve their cognitive processes, whether that be interpreting, reasoning or thinking strategically as well as to develop social and emotional skills.

An evaluation study (2016^[250]), funded by Play England, used a combination of quantitative (activity monitors and global positioning system [GPS] receivers) and qualitative (adult and child interviews) methods to investigate the impact of temporary play streets on the PA of children. It revealed that participating children were outdoors for a large proportion (>70%) of the time the streets were closed and spent on average 16 minutes per hour in MVPA during street closures. The study also found that time spent outdoors during the street closures was more likely to replace sedentary indoor activities than active ones, either indoors or after school. This evaluation suggested that temporary play streets could make a meaningful contribution to meeting the recommended 60-minute MVPA daily in children. Data collected in 2023 showed that 60% of residents who participated in temporary play streets observed their children playing more on other occasions as well (Playing Out, 2023^[253]).

Additional data also showed that playing out sessions were beneficial for both children and adults in addressing loneliness - a increasing issue in OECD countries (OECD, 2021^[255]) - with over 70% of participants stating their children had formed new connections and friendships as a result of the sessions (Playing Out, 2023^[253]). Evidence suggest that temporary play streets create new and important connections between neighbours across generations, strengthening the quality of everyday interactions between adults and children, and fostering a range of other neighbourhood activities (Stenning, 2020^[256]). In 2023, 95% of respondents to the *Playing Out* annual survey reported that the closures made them feel

a stronger sense of belonging in their neighbourhood and 94% of respondents reported that they know more people on their street as a result of the initiative (Playing Out, 2023^[253]). Fostering neighbourliness is an important but generally overlooked aspect of fostering PA in children. Research suggests that children whose parents have more frequent social interactions with neighbours are more likely to meet the daily PA recommendations (Baldwin, Arundell and Hnatiuk, 2022^[257]).

Schools on the Move, Finland

Since the early 2000s, Finland has seen improvements in the overall levels of PA among children and adolescents, with an increase in the proportion of children and adolescents meeting the recommended amount of PA per day and a fall in the number of less physically active children (LIKES, 2022^[258]). Around one-third of Finnish children were estimated to reach the recommended amount of MVPA in 2022, a 15% increase in comparison with 2002 (LIKES, 2022^[258]). PA in children and adolescents has been a strategic priority of the Finnish government for several years, which has funded a variety of national sports and PA programmes. Reflecting these sustained efforts, Finland is among the top performers internationally in terms of the range and depth of its PA policies targeting children (LIKES, 2022^[258]).

Schools on the Move is a programme that has been implemented in Finland since 2010, growing from a pilot project involving 45 schools into a nationwide programme that now includes more than 90% of Finnish comprehensive education schools. The objective of this programme is to increase PA in school-age children by making the school culture more active. To achieve this objective, the programme supports PA during school as well as PA immediately before or after it (LIKES, 2020^[259]). The strategic management of the *Schools on the Move* programme is the responsibility of the Ministry of Education and Culture and the Finnish National Agency for Education. The programme is coordinated by the LIKES Research Centre for Physical Activity and Health (LIKES, 2020^[259]). The *Schools on the Move* model consists of three areas of action aiming to make the school day more active.

1. Active school culture: adding movement to the school day by making changes to school premises, rules, values and attitudes.
2. Active pedagogy: strengthening the competences of teachers in terms of pedagogical integration of activity into lessons.
3. More movement: measures to add movement to the school day through, for example, modifying the structure of the school day or organising sports, campaigns and events.

Schools have autonomy regarding how they implement the programme and each school makes its own decisions on how to best operate its environment. However, the programme supports schools with research and monitoring, management workshops, visits, and teacher training. For instance, since 2014, *Schools on the Move* has been implementing training days for students enrolled in teacher education (LIKES, 2020^[259]). The steering mechanisms employed by the central government in the *Schools on the Move* programme include information production and dissemination, as well as resource allocation in the form of discretionary government grants. In addition, local *Schools on the Move* coordinators help to link the national and local activities (LIKES, 2020^[260]).

The bottom-up, school-led implementation approach of this programme results in variations in school activities and strategies. For example, only 60% of the schools have a dedicated implementation team, around half of the participating schools have added one long activity-based recess to their daily schedule, and 43% of schools have trained students to organise guided recess activities for their peers. While 80% of schools offer club activities, they are implemented by a diverse range of actors. Around half are organised by associations, a quarter by local congregation, and the rest by other educational establishments and private companies (LIKES, 2020^[260]). The project was piloted, then scaled up, and

expanded in scope in three distinct phases, which have distinct features that will be highlighted in the following sections.

Pilot project phase (2010-2012.)

Starting in 2010, the pilot project allocated almost half a million euros in a competitive process to 21 municipalities in Finland. The municipalities, acting in partnership with 45 schools, distributed the funding through shared projects. Schools explored a range of options, such as classrooms having exercise balls as seats, standing desks, physically active breaks, longer recesses with guided activities, use of local green spaces (LIKES, 2020^[259]).

Network collaboration has been a crucial aspect of the programme since the pilot phase. Different government agencies, ministries and services, as well as universities were all connected in a steering group. A partnership network was set up, including not only municipalities and schools but also NGOs, teacher associations, the Sports Federation of Finland, and its regional member organisations (LIKES, 2020^[259]). In addition to the implementing actors, the partnership network included a mentoring network of 14 organisations that could provide additional support and advice. The partnership network was supported by a programme office that was established in the national education agency, with dedicated experienced managers who merged different organisational cultures effectively (LIKES, 2020^[259]). In terms of management, an advisory council, formed by diverse organisations, was created alongside a steering group. The partnership network of *Schools on the Move* was later expanded to include a large share of companies in the sport industry as well as social and healthcare organisations (LIKES, 2020^[259]).

Programme phase (2012-2015)

In 2012, the programme was expanded to a total of 171 municipalities. The collaboration with municipalities at the programme phase was launched with 17 national trial projects, involving several large cities. The municipalities involved at the pilot phase continued their work, and discretionary government grants were made available to municipalities. Starting in 2014, schools could register as “*Schools on the Move*” even if they did not receive project funding. Regional state administrative agencies and regional sports organisations began to play a more significant role in organising regional partnership networks (LIKES, 2020^[259]).

As the programme grew, dissemination and communication of findings became a key priority. *Schools on the Move* was registered as a trademark in Finland in 2012 (and in the EU in 2019). A specific website was set up for the programme, evaluation studies were conducted by research institutes, and knowledge generated from *Schools on the Move* informed the reform of the national core curriculum and teacher education courses (LIKES, 2020^[259]).

Key project phase (2015–2018)

In 2015, *Schools on the Move* became a strategic programme for the government aiming to expand it across the country to promote one hour of PA each day. Its public funding was increased to EUR 40.9 million for three years (Kati and Summanen, 2019^[261]). Although a new 50% co-financing obligation was introduced to encourage sustainability in schools, municipalities’ interest in applying for discretionary government grants to develop their activities continued to increase (LIKES, 2020^[259]).

The advisory council previously used in the programme phase was dissolved, and a three-tier structure, consisting of a steering group, an executive committee, and work divisions was established. The work divisions prepared measures to solve challenges that emerged in the scale-up. The programme office was also expanded to enable the coordination of several sub-networks and networking events. The programme

also started participating in co-operation projects to avoid overlapping measures and increase co-operation at both national and local levels, leveraging the reach of communication channels developed by *Schools on the Move*. Co-operation with companies expanded rapidly during this phase, with fairs and seminars providing them an opportunity to learn about the needs of schools and municipalities to better tailor their support (LIKES, 2020^[259]).

As part of the key project, *Schools on the Move* was also expanded to upper secondary education. Two-year trial projects were launched in 2017 with a total of around EUR 4.6 million and a self-financing share of 20%. In total, 50 trial projects were launched, covering 124 upper secondary education institutions and 95,000 students. Additionally, the *Joy in Motion* programme of the Finnish Olympic Committee, implemented in early childhood education and care (ECEC), was brought under the *Schools on the Move* umbrella in 2017. In 2018, 65 projects were allocated approximately EUR 1.3 million of funding to support pre-primary aged children, with a self-financing share of 50% (LIKES, 2020^[259]).

Monitoring, evaluation and impact

Because school autonomy is considered a core element of the programme, implementation varies widely in each institution and monitoring and evaluation have played an important role in the *Schools on the Move* programme since its inception. Participating schools completed self-evaluation surveys to support the development of their own activities by assessing the current situation at the school and determining the areas of focus for future development activities. This self-evaluation data made an important contribution to the evaluation of the programme. During the key project phase, the evaluation of the *Schools on the Move* became a statutory duty of the National Sports Council of Finland, a panel of experts assisting the Ministry of Culture and Education. The Council has coordinated interim and full evaluations at different stages, combining programme data with monitoring data on PA from the Finnish School-aged PA monitoring database, which has been operational since 2013. For instance, in 2019, the Finnish Education Evaluation Centre (FINEEC) carried out an external evaluation of the key project phase on behalf of the National Sports Council (Kati and Summanen, 2019^[261]).

Engaging 90% of Finnish schools represents a significant achievement for this programme, as it has allowed for broad and diverse capacity building to provided opportunities to increase PA during the school day. Most Finnish municipalities are now applying for grants and have *Schools of the Move* activities in their key strategies, and most Finnish schools now formally include PA in their daily schedules. As the programme relied on bottom-up implementation, involving a diversity of actions across schools, its impact on overall national PA cannot be causally established (Kati and Summanen, 2019^[261]).

In terms of local impact, evidence from the pilot schools participating since 2010 found positive results. PA during the school day increased, and sedentary time decreased in participating primary schools' students. Primary schools also saw a 4% increase in PA during recess and across the school day and secondary schools saw a 12% increase. At lower secondary schools, results indicated that there is more recess time spent outdoors among students. There is also more active commuting to school during winter and the proportion of children meeting PA recommendations increased in the years 2010-2018 (*Schools on the Move*, 2020^[262]). However, more robust and long-term data, is needed to infer a causal link between the programme and PA levels.

At the organisational level, there is broad satisfaction from participating schools. An increasing share of teachers are incorporating activity-based teaching methods across subjects and interrupting prolonged periods of sitting, although female teachers are more likely than male teachers to do this. The self-evaluation survey data collected during the key project phase also showed that primary school students were generally more satisfied with the opportunities for PA at their school compared to secondary school students. Furthermore, primary and combined primary-secondary schools reported more positive views of the programme's outcomes than secondary schools across all areas.

Voice, opportunity, power toolkit, UK

In the UK, public consultation is a statutory requirement for urban developers and planners. However, in practice, this may be “dominated by the few willing and able to navigate the process – the voice of those who stand to gain from development is not heard loudly enough, such as young people” (Ministry of Housing, Communities and Local Government, 2020, p. 12^[263]). Currently, urban planners and developers in the UK rarely incorporate children’s perspectives or consider their needs (Hyde, 2024^[145]). In a survey of over 500 16–18-year-olds from across the UK, 89% reported that they have never been asked to contribute their opinion on the future of their neighbourhood, and 97% reported they would like to be (Grosvenor, 2020^[264]). Shtebunaev (2021^[265]) argues that the inclusion of children in these discussions brings new and innovative perspectives, positively impacts the culture, economy, and social cohesion of a community, promotes their personal development, and fosters a greater sense of ownership of the places built by adults that children will later inherit.

The [Voice, Opportunity, Power Toolkit](#) is a free resource with practical guidance on how to involve children aged 11–18 in the design and management of neighbourhoods, and emerged from a project that began in 2020. It is a collaboration between the UK architecture firm *ZCD Architects*, urban developer *Grosvenor*, charity *Town and Country Planning Association*, and the government agency *Sport England*. The goal of the toolkit is to involve children early in the planning process, to allow them to have strategic relevance and appropriate influence, and to show them that adults consider their views in processes. Although this toolkit is not specifically designed with PA promotion in mind, it has the potential to contribute positively to the sense of ownership and attachment children have with their neighbourhoods. This ownership and attachment are important preconditions for empowering them to spend more time in public spaces, offering greater opportunities for both spontaneous and structured PA.

The toolkit recommends dividing participants into two age ranges, 11–14 and 15–18-year-olds, although combining different age groups is possible with experienced staff in sufficient numbers. An ideal group size of 12–18 children is thought to balance relaxed participation with manageable group dynamics. Costs include staff time, refreshments, food for participants, and the toolkit recommends paying participants in line with local wage rates for their participation (Voice, Opportunity, Power, n.d.^[266]).

The toolkit fits within the standard stages of planning, design, and building used in the UK (i.e., the Royal Institute of British Architect – RIBA - stages). These sessions are recommended to take place after school, on a weekend or during school holidays (Table 6). The main task throughout the sessions is to develop a manifesto, which allows participants to present their reflections and ideas to the development team in a coherent and usable format. Design proposals from adults are then tested by checking if they align with the manifesto developed by the participants, to ensure their ideas have been taken on board by adults.

Table 6. Voice, Opportunity, Power design stages

Session	Duration	Location	Attendees	Aims	Activities	Outputs
1. Your lived experience	2 hours	Schools, Community Centres or Youth Club Spaces in the local area	Children, Teachers or Youth workers, Facilitator or assistant, Design team	Launch the project, introduce the project team to participants, listen and learn about children’s lived experiences, teach new mapping and analysis skills	Favourite childhood memory, best and worst place, map exercise and interviews	A labelled map of the local area, initial themes for further attention, quotes from Children, feedback forms
2. Show us your neighbourhood	2 hours plus travel time	Schools, Community Centres or Youth Club Spaces in the	Children, Teachers or Youth workers, Facilitator or assistant,	Analyse local neighbourhood, debate the impact of design, identify positive and negative	Local tour, thinking about initial themes	Completed local tour worksheets, filmed interviews (optional), Photos taken by Children (optional), first

		local area	Design team (optional)	design aspects, consolidate initial themes from previous session		draft of manifesto drawing on initial themes, feedback forms
3. Tell us what you want	2 hours plus travel time	In a different neighbourhood or development nearby School, Community centre or Youth Club (after the walking tour)	Children, teachers or Youth workers, Facilitator or assistant, Design team (for the second half)	Apply skills and thinking to a new area, finalise the manifesto, brief the design team	Tour of a new area, analysis of the urban development, finalising the manifesto	Completed new area tour worksheets, filmed interview (optional), photos taken by Children (optional), annotate map of the new area, final manifesto, feedback forms
4. Tell us how we're doing	2 hours	Schools, Community Centres or Youth Club Spaces in the local area	Children, Teachers or Youth workers, Facilitator or assistant, Design team, Council or developer	Understanding new proposals, feedback from children, children explore an outdoor space through collage, agreeing on potential amendments to proposals	Presenting manifesto, analysis, debate and feedback, outdoor space collage	Annotated plan of proposals, agreed list of amendments, paper collages, feedback forms
5. You said, we did	2 hours plus extra time for exhibition	Schools, Community Centres or Youth Club Spaces in the local area	Children, Teachers or Youth workers, Facilitator or assistant, Design team, Council or developer, Friends and Family Key people such as the Mayor	Design team demonstrates how they have acted on what they heard from youth, children feel empowered to challenge or endorse the proposal, the achievements of the project are celebrated	Reapplying the manifesto, summing up, exhibition	Completed manifesto feedback sheet, possible statement of support for proposals, feedback forms
6. Next steps	2 hours	Schools, Community Centre or Youth Club Spaces in the local area	Children, teachers or youth workers, Facilitator or assistant, Design team, Council or developer	Establish long-term goals, activities and impact of the group, discuss youth-friendly community spaces, develop a charter, teach skills to foster dialogue	Recap session, 'A Brief for a Youth-Friendly Space' Exercise, drafting a charter for children, process reflection	Brief, charter, feedback forms

Source: adapted from (Voice, Opportunity, Power, n.d.^[266])

Monitoring, evaluation and impact

The implementation of the toolkit is monitored through case studies and supported by commissioned research to inform its ongoing development. Although still in its early stages, the toolkit's design process has already been applied in several cases. For instance, in Earl's Court, a 16-hectare site developed in central London. Plans for the site included the construction of over 4,000 new homes and more than 250,000 square metres of workspace, gardens, play areas, childcare facilities, shops, and cultural venues (ZCD Architects, n.d.^[267]). In this case, architects led engagement activities with three pre-existing youth groups located within a 10–15-minute walk from the Earl's Court site. The sessions focused on gathering children's lived experiences of using outdoor spaces, including streets, squares, and parks. At the end of the process, the participants developed a manifesto for the new neighbourhood, which was presented to the design team as a brief outlining the activities, amenities, management practices, and levels of inclusivity.

and accessibility they desired in local parks and open spaces (ZCD Architects, n.d.^[267]). Manifesto recommendations have had a significant impact on the final design of sites. For example, in the design, location and facilities of permanent structures, such as ball games spaces and seating.

Cross analysis

The presented case studies describe various initiatives that either directly aim to increase PA in childhood or seek to provide essential preconditions where children feel safe, empowered and able to be more active. These diverse initiatives demonstrate the importance of comprehensive and multi-level approaches to promoting PA, involving community partnerships, targeting specific demographics and modifying behavioural incentives. The reviewed case studies collectively illustrate diverse, innovative, and context-sensitive approaches aimed at promoting PA among children across OECD countries. These initiatives span multiple social ecological levels, from intrapersonal and interpersonal to organisational, community, and policy levels. Importantly, no single initiative can make a difference at a population level if it is implemented in isolation. Achieving progress requires multiple initiatives across levels, coupled with trade-offs to the status quo and broader cultural shifts. The following sections will provide an overview of the different levels each initiative operates on. The final section turns to analysing the strengths, weaknesses and policy relevance of these initiatives, to draw valuable insights for policy makers in OECD countries.

SEM levels

Intrapersonal level

Initiatives at this level directly influence children's knowledge, skills, attitudes, and behaviours regarding physical activity (PA). The majority of case studies target this foundational level to some degree. For instance, *Active Schools Flag* (4.1) and *Schools on the Move* (4.8) embed regular physical activities within school routines to increase daily movement opportunities. Similarly, *Healthy Movement for Children* (4.6) uses structured additional exercise sessions led by specialised coaches to directly motivate children towards lifelong active habits. *Bike Trains* (4.2) promotes the development of individual cycling skills, while *DADAE* (4.4) enhances girls' physical competencies and self-efficacy through guided sports training, empowering personal engagement in PA.

Interpersonal level

Fewer case studies specifically address the interpersonal level, despite its critical role in mediating PA through relationships. *DADAE* (4.4) stands out here, explicitly strengthening familial bonds and modelling behaviours between fathers and daughters to foster mutual support for sustained physical activity. *Bike Trains* (4.2) also directly seek to modify relationships to promote PA, using adult guides to safely navigate children on school commutes, fostering positive interactions between peers and providing a sense of collective safety. *Temporary play streets* (4.7) also contribute to PA-positive relationships, by creating safe, communal neighbourhoods where children and families interact informally, building trust and peer encouragement that promote sustained active play.

Organisational level

Several initiatives actively reshaped organisational practices to embed physical activity into daily routines. *Active Schools Flag* (4.1) exemplified this by transforming school environments and curricula, mandating physical education and integrating regular movement into teaching practices. Similarly, *Schools on the Move* (4.8) restructures the school day to include systematic PA breaks and active learning sessions.

Healthy Movement for Children (4.6) institutionalises weekly sessions by external movement coaches, ensuring consistent organisational commitment. Additionally, *Gender-inclusive Urban Design* (4.5) practices required municipal organisations to adopt gender-sensitive planning principles, systematically including young girls in urban development processes to increase equitable opportunities for PA.

Community level

Community-level interventions tend to focus on changes within a political, geographic or social network boundary, such as neighbourhood amenities, to reshape norms, perceptions, and collective practices to support PA. Catalonia's *New Urban Model* (4.3) exemplifies this through the *Superblocks* initiative, which redesigns neighbourhoods to prioritise pedestrian and cycling-friendly environments by reclaiming the disproportionate amount of street space previously dedicated to the private car, encouraging communities to embrace active, healthier lifestyles. *Temporary play streets* (4.7) similarly use street space typically made inaccessible by through traffic, aiming to shift community perceptions and daily habits. The temporary conversion of streets into safe play areas intends to normalise outdoor play and foster stronger community cohesion. Likewise, *Bike Trains* (4.2) galvanises community support and active mobility awareness, encouraging a shift from car-centric norms towards collective cycling initiatives. The *Voice, Opportunity, Power Toolkit* (4.9) involves children actively in planning community spaces, strengthening community engagement and collective responsibility for child-friendly urban environments. Although not intended to directly target PA, the toolkit can be an important mechanism to enhance children's sense of ownership over their neighbourhoods, which is an important foundation for PA to take place in public spaces. It also seeks to disrupt traditional power structures and hierarchies that tend to dominate urban redevelopment.

Public policy level

Public policy-level initiatives leverage governmental structures and strategies to institutionalise sustainable support for PA. *Active Schools Flag* (4.1) and *Healthy Movement for Children* (4.6) receive significant government backing, positioning them as integral parts of national strategies aimed at health and education sectors, ensuring long-term sustainability and broad adoption. Similarly, *Bike Trains* (4.2) benefits from a favourable context, with an explicit national strategy promoting cycling and active mobility in school commuting, supported by municipal policies and resources. Catalonia's *New Urban Model* (4.3) exemplifies ambitious city-wide policy frameworks, including urban planning strategies that integrate children's health, active mobility, and play into comprehensive urban transformation efforts, thereby creating systemic and enduring public support for PA promotion.

Strengths and weaknesses

One notable strength across many of the initiatives is their robust multi-level engagement and comprehensive scope. For instance, Ireland's *Active Schools Flag* (4.1) programme exemplifies how structured and holistic school-level interventions can drive substantial cultural change within educational institutions. Through national policies that help schools to systematically embed PA into daily routines, involving both students and staff, ASF successfully addresses multiple ecological levels simultaneously. Similarly, Austria's *Healthy Movement for Children* (4.6) effectively integrates local sports clubs into educational settings with tailored professional development opportunities, creating strong community ties that sustain children's engagement in PA beyond structured sessions.

Community involvement is often a crucial factor for the success of PA initiatives. The *Bike Trains* programme (4.2) in Portugal and *Temporary play streets* (4.7) in the UK rely on local communities to organise and sustain activities, leading to significant growth and positive impacts on PA and community

cohesion. However, the dependence on community motivation runs the risk of variability in implementation and participation, highlighting the need for consistent policy support and infrastructure—delivered in ways that preserve the autonomy and empowerment of local communities

Another significant strength lies in the thoughtful integration of children's perspectives into programme design. Initiatives like Catalonia's *New Urban Model* (4.3), Sweden's *gender-inclusive urban initiatives* (4.5) and the UK's *Voice, Opportunity, Power toolkit* (4.9) prioritise meaningful youth participation, ensuring that interventions are responsive to the lived realities and priorities of their intended beneficiaries. These initiatives underscore the importance of empowering children by actively involving them in the decision-making processes, leading to higher programme acceptance, relevance, and usage.

Targeting specific demographics is essential to address disparities in PA levels. *Gender-inclusive urban design* initiatives in Sweden (4.5) and the *DADAE* programme (4.4) in Australia focus on creating opportunities for girls and father-daughter pairs, respectively. These initiatives have shown positive impacts on PA levels and social-emotional well-being, but they also face challenges in scaling up and ensuring broad reach. Policy makers should consider targeted approaches to address the unique needs of different demographics, while ensuring inclusivity and accessibility.

Several programmes benefit from clear alignment with existing policy frameworks and strategic backing from local or national governments. Catalonia's *New Urban Model* (4.3) and Portugal's *Bike Trains* (4.2) initiative illustrate how aligning local initiatives with broader policy goals, such as urban mobility and sustainable city planning, can enhance programme legitimacy, attract necessary resources, and facilitate long-term sustainability. This strategic alignment often ensures continued funding and policy support, crucial for programme resilience and scalability.

Despite these strengths, several common weaknesses are also evident. One significant issue is the resource-intensive nature of many initiatives, potentially limiting their scalability and sustainability. The extensive *Active Schools Flag* (4.1) accreditation process, while thorough, places considerable administrative requirements on participating schools, potentially hindering participation by smaller or resource-constrained schools. Similarly, Sweden's *gender-inclusive urban design* processes (4.5), though highly impactful locally, may face challenges scaling nationally due to their comparatively high resource intensity and longer-term dependency on ongoing maintenance and structured programming.

Another frequent limitation relates to the sustainability of community-driven initiatives, particularly those heavily reliant on voluntary participation. Programmes such as the UK's *Temporary play streets* (4.7) and Portugal's *Bike Trains* (4.2) rely significantly on community volunteers, which can introduce variability in effectiveness and sustainability, especially when scaling up or replicating initiatives in new contexts. Ensuring sustainable volunteer engagement or transitioning to more structured support mechanisms could mitigate these risks.

Evaluation practices also emerge as a common area needing improvement. Many programmes lack systematic longitudinal and comparative evaluation designs, limiting robust conclusions about their long-term impact. While Australia's *DADAE* (4.4) initiative and *Active Schools Flag* (4.1) include rigorous mixed-method evaluations, others like Sweden's *gender-inclusive urban design* initiatives (4.5) and the UK's *temporary play streets* (4.7) rely heavily on anecdotal or participant-reported outcomes, which may be susceptible to biases. Strengthening evaluation methodologies through high quality systematic data collection, control groups, and long-term monitoring is essential for establishing robust evidence of efficacy and informing future policy decisions. Robust evaluation is critical for understanding the effectiveness and long-term impact of PA initiatives and possibly inferring causal links if the context allows it. Comprehensive evaluation methods, including both qualitative and quantitative approaches, are essential to provide robust evidence and inform future improvements. Importantly, the tension between the need for policy makers to ensure fidelity to the intervention design and the importance of context adapted solutions can pose challenges for evaluation. ASF (4.1) took a highly structured approach, prioritising implementation fidelity,

which is suitable for more rigorous evaluations compared to, for instance, *Schools on the Move* (4.8), which prioritised school autonomy at the expense of data that can support causal conclusions about overall programme effectiveness.

Conclusion

While existing international surveillance programmes for physical activity (PA) have notable limitations, including inconsistent definitions, underrepresentation of disadvantaged or disabled groups, and weak coverage of social ecological factors, evidence consistently shows that most children today are not active enough. Promoting PA among children in OECD countries is a multifaceted challenge requiring coordinated, multi-level action. This paper used a Social Ecological Model (SEM) to understand how policy makers can empower children to be more physically active.

Individual characteristics such as knowledge, attitudes, behaviour, self-concept, and skills are rightfully seen as key determinants. Interventions at this level typically target these personal attributes directly, and this has been the most extensively researched and implemented domain. At the same time, support from friends, parents, and teachers also plays a critical role in shaping children's PA. Peer motivation is particularly powerful during adolescence, when social belonging influences behaviour. Parents can support their children by providing logistical help and modelling active lifestyles. Yet this interpersonal level remains under-researched and underrepresented in policy, creating a gap that needs to be addressed.

At the organisational level, schools and sports clubs are crucial environments for promoting PA. Interventions may involve re-orienting institutions towards inclusive “sport-for-all” approaches, adapting management and teaching practices, and improving facilities. Schools can strengthen PA cultures by involving students in programme design, embedding activity within curricula, and identifying staff champions. Partnerships across schools, charities, and clubs can extend opportunities beyond the school day. Sports clubs should provide both competitive and leisure opportunities, ensuring health promotion becomes part of their core mission.

At the community level, interventions focus on changes within political, geographic, or social network boundaries. Community-driven initiatives have strong potential for significant local impact through grassroots engagement, as exemplified by *Temporary Play Streets* (4.7). Policy makers must complement volunteer-based efforts with appropriate structural support—maintaining momentum and consistency while safeguarding local ownership. Grassroots initiatives can be highly impactful, but their reliance on favourable local conditions, such as motivated residents or supportive municipalities, can result in patchy coverage and uneven outcomes. National policy makers can support these initiatives by promoting them publicly, reducing bureaucracy and cost barriers, and providing evidence-based guidance, while keeping policies light-touch to preserve flexibility and local adaptation.

When providing neighbourhood facilities, policy makers should recognise that the influence of the physical environment on children's PA depends not only on infrastructure but also on children's perceptions and experiences of those spaces. Neighbourhoods need to be open to play, rather than confining it to designated areas that risk suppressing spontaneity. Aligning local PA initiatives with broader urban planning, mobility, and sustainability goals enhances effectiveness and sustainability. Programmes such as Portugal's *Bike Trains* (4.2) and Barcelona's *Play Plan* (4.3) demonstrate how integrating PA promotion into urban mobility and recreation agendas can generate cross-sectoral synergies.

Local, regional, and national policies establish the conditions for population-wide behaviour change through clear guidelines, consistent funding, and supportive environments. Programmes such as Ireland's *Active Schools Flag* (4.1) and Finland's *Schools on the Move* (4.8) show the benefits of embedding PA within national education frameworks. Policy makers should also address inequities in PA participation to ensure that all children have equal opportunities. Large-scale initiatives require sustained public

investment but can be complemented by co-financing from parents, sports associations, municipalities, and other stakeholders. In addition, governments should fund comprehensive, high-quality longitudinal evaluations assessing both short- and long-term impacts. Building robust evaluation frameworks into programme design is a mandatory requirement for improving implementation quality, securing political support, and enabling knowledge transfer across contexts.

Increasing PA among children requires a broader cultural shift across society. Governments must adopt cross-sector approaches to reclaim streets from cars, counter sedentary habits, and improve perceptions of safety through road closures, one-way systems, traffic-calming measures, and reduced through traffic. Urban planning that promotes outdoor play should be integral to efforts to make cities more liveable and accessible. Culture change also involves reconsidering attitudes toward risk. Children naturally seek out situations that are both exhilarating and challenging; these experiences support cognitive and physical development. Policy makers, educators, and parents need to recognise the developmental value of risk in play. Parents must be supported to lead by example; improving their own activity levels and understanding how their behaviour influences their children. Finally, public communication campaigns can help embed PA in daily life by raising awareness of the harms of sedentary behaviour and highlighting the physical, emotional, and social benefits of active lifestyles. Taken together, these efforts can foster a culture in which PA is valued, accessible, and integrated into everyday life for all children.

References

- Active Healthy Kids England (2022), *The 2022 Report Card on Physical Activity for Children & Youth*, Centre for Motivation and Health Behaviour Change, University of Bath, <https://www.bath.ac.uk/publications/active-healthy-kids-england-2022-report-card/attachments/active-healthy-kids-england-2022-report-card.pdf> (accessed on 10 April 2025). [248]
- Active Schools Flag (n.d.), *About ASF*, <https://activeschoolflag.ie/about-asf/> (accessed on 5 April 2025). [195]
- Adank, A. et al. (2023), “That’s what I like! Fostering enjoyment in primary physical education”, *European Physical Education Review*, Vol. 30/2, pp. 283-301, <https://doi.org/10.1177/1356336X231205686>. [92]
- Ahrens, W. et al. (2022), “Dietary behaviour and physical activity policies in Europe: learnings from the Policy Evaluation Network (PEN)”, *European Journal of Public Health*, on behalf of the PEN consortium, pp. iv114–iv125, <https://doi.org/10.1093/eurpub/ckac148>. [161]
- AITSL (2017), *Australian Professional Standards for Teachers: Graduate Teacher Level*, AITSL, <https://www.aitsl.edu.au/docs/default-source/default-document-library/download-graduate-level-descriptorsa45e8f91b1e86477b58fff00006709da.pdf> (accessed on 14 May 2025). [114]
- Alghannam, A. et al. (2023), “Public policies to increase physical activity and reduce sedentary behavior: a narrative synthesis of “reviews of reviews””, *Global Health Action*, Vol. 16/1, <https://doi.org/10.1080/16549716.2023.2194715>. [157]

- Amati, M., Q. Stevens and S. Rueda (2023), "Taking Play Seriously in Urban Design: The Evolution of Barcelona's Superblocks", *Space and Culture*, Vol. 27/2, pp. 156-171, <https://doi.org/10.1177/12063312231159229>. [204]
- An Taisce (n.d.), *Green Schools Ireland*, An Taisce: The National Trust for Ireland, <https://greenschoolsireland.org/> (accessed on April April 2025). [192]
- Anjana, R. et al. (2024), "Associations of perceived neighbourhood and home environments with sedentary behaviour among adolescents in 14 countries: the IPEN adolescent cross sectional observational study", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 21/1, <https://doi.org/10.1186/s12966-024-01678-4>. [135]
- Arufe-Giráldez, V. et al. (2024), "Multi-Context Strategies and Opportunities for Increasing Levels of Physical Activity in Children and Young People: A Literature Review", *Children*, Vol. 11/12, p. 1475, <https://doi.org/10.3390/children11121475>. [84]
- Arufe-Giráldez, V. et al. (2024), "Multi-Context Strategies and Opportunities for Increasing Levels of Physical Activity in Children and Young People: A Literature Review", *Children*, Vol. 11/12, p. 1475, <https://doi.org/10.3390/children11121475>. [137]
- Ashton, L. et al. (2024), "Twelve-month outcomes of a community-based, father-daughter physical activity program delivered by trained facilitators", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 21/101, <https://doi.org/10.1186/s12966-024-01648-w>. [223]
- Ashton, L. et al. (2024), "Twelve-month outcomes of a community-based, father-daughter physical activity program delivered by trained facilitators", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 21/101, <https://doi.org/10.1186/s12966-024-01648-w>. [230]
- ASPB (2021), *Report of results of the environmental and health effects of the Superblocks model in Barcelona*, Agència de Salut Pública de Barcelona [Public Health Agency Barcelona], https://www.aspb.cat/wp-content/uploads/2021/10/English-ASPB_salut-carrers-resultsreport-Superblocks.pdf (accessed on 14 April 2025). [217]
- Aston, R. (2018), *Physical health and well-being in children and youth: Review of the literature*, OECD Publishing, Paris, <https://doi.org/10.1787/102456c7-en>. [166]
- Aubert, S. et al. (2022), "Global Matrix 4.0 Physical Activity Report Card Grades for Children and Adolescents: Results and Analyses From 57 Countries", *Journal of Physical Activity and Health*, Vol. 19/11, pp. 700-728, <https://doi.org/10.1123/jpah.2022-0456>. [15]
- Aubert, S. et al. (2021), "Global prevalence of physical activity for children and adolescents; inconsistencies, research gaps, and recommendations: a narrative review", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 18/1, <https://doi.org/10.1186/s12966-021-01155-2>. [40]
- Australian Sports Commission (2020), *Sports Ability: Using TREE*, https://www.sportaus.gov.au/sports_ability/using_tree#:~:text=Inclusive%20activity%20cards%20designed%20to%20assist%20the%20delivery,inclusive%20of%20students%20with%20a%20range%20of%20abilities. (accessed on 14 May 2025). [110]

- Back, J. et al. (2022), “Drop-out from team sport among adolescents: A systematic review and meta-analysis of prospective studies”, *Psychology of Sport and Exercise*, Vol. 61, p. 102205, <https://doi.org/10.1016/j.psychsport.2022.102205>. [63]
- Baldwin, J., L. Arundell and J. Hnatiuk (2022), “Associations between the neighbourhood social environment and preschool children’s physical activity and screen time”, *BMC Public Health*, Vol. 22/1065, <https://doi.org/10.1186/s12889-022-13493-2>. [257]
- Barcelona Municipality (2024), *Nueva área de juego infantil accesible en los Jardins de Montserrat Roig* [New accessible children’s play area in the Jardins de Montserrat Roig], https://ajuntament.barcelona.cat/ecologiaurbana/es/noticia/nueva-area-de-juego-infantil-accesible-a-los-jardines-de-montserrat-roig_1418743 (accessed on 8 May 2025). [212]
- Barcelona Municipality (2022), *Barcelona Ciutat Jugable* [Barcelona playable city], https://institutinfancia.cat/wp-content/uploads/2023/03/202303_ciutatjugable_poster.pdf (accessed on 4 15 2025). [219]
- Barcelona Municipality (2019), *Plan for Play in public spaces, 2030 horizon in Barcelona*, https://bcnroc.ajuntament.barcelona.cat/jspui/bitstream/11703/116054/1/Play%20Plan_BCN_eng.pdf (accessed on 8 May 2025). [211]
- Barcelona Municipality (n.d.), *Protegim les escoles* [Let’s Protect Schools], <https://ajuntament.barcelona.cat/ecologiaurbana/ca/que-fem-i-per-que/urbanisme-per-als-barris/protegim-escoles> (accessed on 15 April 2025). [213]
- Belton, S. et al. (2020), “Ten Years of ‘Flying the Flag’: An Overview and Retrospective Consideration of the Active School Flag Physical Activity Initiative for Children—Design, Development & Evaluation”, *Children*, Vol. 7/300, <https://doi.org/10.3390/children7120300>. [194]
- Bernardino, J. et al. (2023), ““Bike trains” to school to increase cycling adoption and bikeability: Results from the Lisbon city program”, *Transportation Research Procedia*, Vol. 72, pp. 1910-1917, <https://doi.org/10.1016/j.trpro.2023.11.670>. [197]
- Bhagat, Y. et al. (2024), *Car Ownership: Evidence Review*, National Centre for Social Research, <https://assets.publishing.service.gov.uk/media/6781339100e3d719f19217f1/dft-car-ownership-evidence-review.pdf> (accessed on 10 April 2025). [247]
- Bolger, L. et al. (2021), “Global levels of fundamental motor skills in children: A systematic review”, *Journal of Sports Sciences*, Vol. 39/7, pp. 717-753, <https://doi.org/10.1080/02640414.2020.1841405>. [21]
- Borgonovi, F., H. Seitz and I. Vogel (2022), “Swimming skills around the world: Evidence on inequalities in life skills across and within countries”, *OECD Social, Employment and Migration Working Papers*, No. 281, OECD Publishing, Paris, <https://doi.org/10.1787/0c2c8862-en>. [73]
- Brazendale, K. et al. (2020), “COVID-19 mitigation strategies: A natural experiment highlighting the importance of structure in the prevention and treatment of childhood obesity”, *Preventive Medicine Reports*, Vol. 30, p. 102023, <https://doi.org/10.1016/j.pmedr.2022.102023>. [118]

- Brazendale, K. et al. (2017), "Understanding differences between summer vs. school obesogenic behaviors of children: the structured days hypothesis", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 14/100, <https://doi.org/10.1186/s12966-017-0555-2>. [116]
- Bronfenbrenner, U. (1979), *The ecology of human development: Experiments by nature and design.*, Cambridge, MA: Harvard University Press. [64]
- Brown, H. et al. (2016), "Family based interventions to increase physical activity in children: a systematic review, meta-analysis and realist synthesis.", *Obes Rev.*, Vol. 17/4, pp. 345–60. [222]
- Brown, V. et al. (2024), "Cost-effectiveness of reducing children's sedentary time and increasing physical activity at school: the Transform-Us! intervention.", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 21/15, <https://doi.org/10.1186/s12966-024-01560-3>. [106]
- Brussoni, M. et al. (2015), "What is the Relationship between Risky Outdoor Play and Health in Children? A Systematic Review", *Int J Environ Res Public Health*, Vol. 8/12, pp. 6423-54, <https://doi.org/10.3390/ijerph120606423>. [37]
- Brussoni, M. et al. (2012), "Risky Play and Children's Safety: Balancing Priorities for Optimal Child Development", *Int J Environ Res Public Health*, Vol. 9/9, pp. 3134-48, <https://doi.org/10.3390/ijerph9093134>. [251]
- Burnay, C. and R. Cordovil (2016), "Crawling Experience Predicts Avoidance of Real Cliffs and Water Cliffs: Insights from a New Paradigm", *Infancy*, Vol. 21/5, pp. 677-684, <https://doi.org/10.1111/inf.12134>. [34]
- Burnay, C. et al. (2021), "The effect of specific locomotor experiences on infants' avoidance behaviour on real and water cliffs", *Dev Sci*, Vol. 24/3, p. 13047, <https://doi.org/10.1111/desc.13047>. [35]
- Burns, T. and F. Gottschalk (eds.) (2020), *Education in the Digital Age: Healthy and Happy Children*, Educational Research and Innovation, OECD Publishing, Paris, <https://doi.org/10.1787/1209166a-en>. [1]
- Burns, T. and F. Gottschalk (eds.) (2019), *Educating 21st Century Children: Emotional Well-being in the Digital Age*, Educational Research and Innovation, OECD Publishing, Paris, <https://doi.org/10.1787/b7f33425-en>. [269]
- Buttazzoni, A., K. Nelson Ferguson and J. Gilliland (2023), "Barriers to and facilitators of active travel from the youth perspective: A qualitative meta-synthesis", *SSM Popul Health*, Vol. 26/22, p. 101369, <https://doi.org/10.1016/j.ssmph.2023.101369>. [76]
- Carlin, A. et al. (2024), "Results from Ireland North and South's 2022 report card on physical activity for children and adolescents", *Journal of Exercise Science & Fitness*, Vol. 22/1, pp. 66-72, <https://doi.org/10.1016/j.jesf.2023.12.003>. [50]

- Carson, R. et al. (2014), "Impact of trained champions of comprehensive school physical activity programs on school physical activity offerings, youth physical activity and sedentary behaviors", *Prev Med*, Vol. 69/1, pp. 9-12, <https://doi.org/10.1016/j.ypmed.2014.08.02>. [94]
- Cassar, S. et al. (2019), "Adoption, implementation and sustainability of school-based physical activity and sedentary behaviour interventions in real-world settings: a systematic review", *Int J Behav Nutr Phys Act*, Vol. 16/1, p. 120, <https://doi.org/10.1186/s12966-019-0876-4>. [185]
- Cerin, E. et al. (2022), "Determining thresholds for spatial urban design and transport features that support walking to create healthy and sustainable cities: findings from the IPEN Adult study", *The Lancet Global Health*, Vol. 10/6, pp. e895-e906, [https://doi.org/10.1016/s2214-109x\(22\)00068-7](https://doi.org/10.1016/s2214-109x(22)00068-7). [134]
- Chalkley, A. and K. Milton (2021), "A critical review of national physical activity policies relating to children and young people in England", *J Sport Health Sci*, Vol. 10/3, pp. 255-262, <https://doi.org/10.1016/j.jshs.2020.09.010>. [168]
- Chong, K. et al. (2024), "Pooled Analysis of Physical Activity, Sedentary Behavior, and Sleep Among Children From 33 Countries", *JAMA Pediatrics*, Vol. 178/11, p. 1199, <https://doi.org/10.1001/jamapediatrics.2024.3330>. [16]
- Contardo Ayala, A. et al. (2025), "Protocol of the TransformUs® Secondary Schools program: A Type II hybrid implementation-effectiveness trial to increase adolescents' physical activity and reduce sedentary time in secondary schools", *BMJ Open*. [108]
- Cordovil, R. et al. (2015), "An ecological stance on risk and safe behaviors in children: The role of affordances and emergent behaviors", *New Ideas in Psychology*, Vol. 30/6, pp. 50-59, <https://doi.org/10.1016/j.newideaps>. [36]
- Cordovil, R. et al. (2009), "The efficacy of safety barriers for children: Absolute efficacy, time to cross and action modes in children between 19 and 75 months", *International Journal of Injury Control and Safety Promotion*, Vol. 16/3, pp. 143-151, <https://doi.org/10.1080/17457300903024145>. [38]
- Crane, J. and V. Temple (2014), "A systematic review of dropout from organized sport among children and youth", *European Physical Education Review*, Vol. 21/1, pp. 114-131, <https://doi.org/10.1177/1356336X14555294>. [59]
- Daly-Smith, A. et al. (2021), "Behaviours that prompt primary school teachers to adopt and implement physically active learning: a meta synthesis of qualitative evidence", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 18/151, <https://doi.org/10.1186/s12966-021-01221-9>. [103]
- Daly-Smith, A. et al. (2021), "Behaviours that prompt primary school teachers to adopt and implement physically active learning: a meta synthesis of qualitative evidence", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 18/1, <https://doi.org/10.1186/s12966-021-01221-9>. [101]

- Dang, L. and J. Weiss (2021), "Evidence on the Relationship between Place Attachment and Behavioral Intentions between 2010 and 2021: A Systematic Literature Review", *Sustainability*, Vol. 13/23, p. 13138, <https://doi.org/10.3390/su132313138>. [142]
- Dapp, L., V. Gashaj and C. Roebbers (2021), "Physical activity and motor skills in children: A differentiated approach", *Psychology of Sport and Exercise*, Vol. 54, p. 101916, <https://doi.org/10.1016/j.psychsport.2021.101916>. [22]
- Daughters and Dads (n.d.), *Daughters and Dads: About*, <https://www.daughtersanddads.com.au/about/#dadae> (accessed on 10 April 2025). [224]
- De Craemer, M. et al. (2024), "Practical steps needed to achieve impact of the WHO 2019 movement behaviour guidelines for children under the age of 5: the SUNRISE Study Europe Group evaluation", *The Lancet Regional Health – Europe*, Vol. 39, pp. 2666-7762, <https://doi.org/10.1016/j.lanepe.2024.100869>. [172]
- DEDIPAC Consortium (2017), "Policy determinants of physical activity across the life course: a 'DEDIPAC' umbrella systematic literature review", *European Journal of Public Health*, Vol. 28/1, pp. 105-118, <https://doi.org/10.1093/eurpub/ckx174>. [158]
- den Braver, N. et al. (2022), "The impact of mass-media campaigns on physical activity: a review of reviews through a policy lens.", *Journal of Public Health*, Vol. 32, pp. iv71-iv83, <https://doi.org/10.1093/eurpub/ckac085>. [162]
- Department of Justice and Equality (n.d.), *Welcome to the Yellow Flag*, Department of Justice and Equality, <https://yellowflag.ie/> (accessed on 5 April 2025). [193]
- DE-PASS (2024), "DE-PASS Best Evidence Statement (BEST): A Systematic Review and Meta-analysis on the Effectiveness of Trials on Device-Measured Physical Activity and Sedentary Behaviour and Their Determinants in Children Aged 5–12 Years", *Sports Medicine*, Vol. 55/2, pp. 419-458, <https://doi.org/10.1007/s40279-024-02136-8>. [89]
- Donaldson, A. et al. (2021), "The Challenges of Partnering to Promote Health through Sport", *Int J Environ Res Public Health*, Vol. 18/13, p. 7193, <https://doi.org/10.3390/ijerph18137193>. [125]
- Drijvers, H. et al. (2021), "Student Participation in Physical Activity Recess Programs in Secondary Schools", *International Journal of Kinesiology in Higher Education*, Vol. 6/4, pp. 212–224, <https://doi.org/10.1080/24711616.2021.1921635>. [20]
- Duffey, K. et al. (2021), "Barriers and Facilitators of Physical Activity Participation in Adolescent Girls: A Systematic Review of Systematic Reviews", *Frontiers in Public Health*, Vol. 9, <https://doi.org/10.3389/fpubh.2021.743935>. [72]
- Duncan, M. et al. (2015), "Autonomous motivation mediates the relation between goals for physical activity and physical activity behavior in adolescents", *Journal of Health Psychology*, Vol. 22/5, pp. 595-604, <https://doi.org/10.1177/1359105315609089>. [69]

- Egan, C. et al. (2024), "Movement, my favourite thing: Children's perceptions of movement integration in school", *Curriculum Studies in Health and Physical Education*, <https://doi.org/10.1080/25742981.2024.2374321>. [93]
- Eime, R. et al. (2021), "Five-Year Changes in Community-Level Sport Participation, and the Role of Gender Strategies", *Front Sports Act Living*, Vol. 8/3, p. 710666, <https://doi.org/10.3389/fspor.2021.710666>. [71]
- Eime, R., J. Harvey and M. Charity (2019), "Sport drop-out during adolescence: is it real, or an artefact of sampling behaviour?", *International Journal of Sport Policy and Politics*, Vol. 11/4, pp. 715-726, <https://doi.org/10.1080/19406940.2019.1630468>. [58]
- Eime, R. et al. (2016), "Age profiles of sport participants", *BMC Sports Science, Medicine and Rehabilitation*, Vol. 8/6, <https://doi.org/10.1186/s13102-016-0031-3>. [57]
- Emmert-Fees, K. et al. (2022), "Estimating the impact of nutrition and physical activity policies with quasi-experimental methods and simulation modelling: an integrative review of methods, challenges and synergies", *European Journal of Public Health*, On behalf of the PEN consortium, pp. iv84–iv91, <https://doi.org/10.1093/eurpub/ckac051>. [183]
- European Commission (2022), *Special Eurobarometer SP525: Sport and physical activity*, <https://europa.eu/eurobarometer/surveys/detail/2668> (accessed on 7 May 2025). [87]
- Fialho, S. (2023), "Cycling to School: Building the Case for Sustainable Micromobility Practices in Portugal", *XII Congresso Português de Sociologia*, https://aps.pt/wp-content/uploads/XII%20Congresso/Ambiente_Sociedade_XII-APS-29941.pdf (accessed on 9 April 2025). [77]
- Fillon, A. et al. (2023), "2022 French Report Card on Physical Activity and Sedentary Behaviors in Children and Youth: From Continuous Alarming Conclusions to Encouraging Initiatives", *Journal of Physical Activity and Health*, Vol. 20/7, pp. 664-673, <https://doi.org/10.1123/jpah.2022-0660>. [51]
- Fontes, A. (2021), "We protect schools: tactical urbanism actions in the school", *Journal of Environmental Management and Sustainability*, Vol. 10/1, pp. 1-21, <https://doi.org/10.5585/geas.v10i1.19164>. [206]
- Forberger, S. et al. (2022), "What we know about the actual implementation process of public physical activity policies: results from a scoping review", *European Journal of Public Health*, On behalf of the PEN consortium, pp. iv59–iv65, <https://doi.org/10.1093/eurpub/ckac089>. [175]
- Gallahue, D. (2012), *Understanding motor development : infants, children, adolescents, adults*, McGraw-Hill, https://archive.org/details/understandingmot0000gall_07ed (accessed on 8 May 2025). [18]
- Gao, Z. et al. (2021), "Motor Skill Competence Matters in Promoting Physical Activity and Health", *Biomed Res Int*, Vol. 24, p. 9786368, <https://doi.org/10.1155/2021/9786368>. [19]

- Gelius, P. et al. (2021), “The added value of using the HEPA PAT for physical activity policy monitoring: a four-country comparison”, *Health Research Policy and Systems*, the PEN consortium, p. 22, <https://doi.org/10.1186/s12961-021-00681-6>. [165]
- Gelius, P. et al. (2020), “What are effective policies for promoting physical activity? A systematic review of reviews,”, *Preventive Medicine Reports*, Vol. 18, p. 101095, <https://doi.org/10.1016/j.pmedr.2020.101095>. [150]
- Gill, T. (2007), *No fear : growing up in a risk averse society*, Calouste Gulbenkian Foundation. [31]
- Golden, G. (2020), *Education policy evaluation: Surveying the OECD landscape*, OECD Publishing, Paris, <https://doi.org/10.1787/9f127490-en>. [180]
- Google Scholar (2025), Search “An Ecological Perspective on Health Promotion Programs”, https://scholar.google.com/scholar?hl=en&as_sdt=2005&sciodt=0%2C5&cites=16761013143643339362&scipsc=&as_ylo=2024&as_yhi=2024 (accessed on 23 May 2025). [268]
- Gottschalk, F. and H. Borhan (2023), “Child participation in decision making: Implications for education and beyond”, *OECD Education Working Papers*, No. 301, OECD Publishing, Paris, <https://doi.org/10.1787/a37eba6c-en>. [2]
- Granic, I., H. Morita and H. Scholten (2020), “Beyond Screen Time: Identity Development in the Digital Age”, *Psychological Inquiry*, Vol. 31/3, pp. 195–223, <https://doi.org/10.1080/1047840X.2020.1820214>. [41]
- Grosvenor (2020), *I Live Here Too: Why Young People Wants a Stake in the Future of Their Neighbourhood*, Grosvenor Britain & Ireland, <https://grosvenorlive.b-cdn.net/live/grosvenor/media/property-uk-images/uk%20documents/yet-executive-summary-2020.pdf> (accessed on 15 April 2025). [264]
- Gubbels, J., D. Van Kann and M. Jansen (2012), “Play equipment, physical activity opportunities, and children’s activity levels at childcare”, *J Environ Public Health*, p. 326520, <https://doi.org/10.1155/2012/326520>. [139]
- Guerra, J. et al. (2024), “The availability between recreational facilities and physical activity of US adolescents”, *Preventive Medicine Reports*, Vol. 38, p. 102592, <https://doi.org/10.1016/j.pmedr.2024.102592>. [140]
- Guthold, R. et al. (2020), “Global trends in insufficient physical activity among adolescents: a pooled analysis of 298 population-based surveys with 1·6 million participants”, *Lancet Child Adolesc Health*, Vol. 4/1, pp. 23-35, [https://doi.org/10.1016/S2352-4642\(19\)30323-2](https://doi.org/10.1016/S2352-4642(19)30323-2). [17]
- Hart, J. and M. Tannock (2019), *Rough play: Past, present and potential*, Cambridge University Press. [25]
- HBSC (2023), *Health Behaviour in School-aged Children study*, <https://data-browser.hbsc.org> (accessed on 7 April 2025). [242]

- Healthy Ireland/ Department of Health (2016), *Get Ireland Active: National Physical Activity Plan for Ireland*, Health Ireland/ Department of Health, <https://assets.gov.ie/7563/23f51643fd1d4ad7abf529e58c8d8041.pdf> (accessed on 5 April 2025). [191]
- Henchoz, Y. (ed.) (2018), "Socio-economic determinants of physical activity across the life course: A "DEterminants of Diet and Physical ACTivity" (DEDIPAC) umbrella literature review", *PLOS ONE*, Vol. 13/1, p. e0190737, <https://doi.org/10.1371/journal.pone.0190737>. [53]
- Hesketh, K. et al. (2023), "Results from the Australian 2022 Report Card on physical activity for children and young people", *Journal of Exercise Science & Fitness*, Vol. 21/1, pp. 83-87, <https://doi.org/10.1016/j.jesf.2022.10.006>. [220]
- Howie, E., B. Daniels and J. Guagliano (2018), "Promoting Physical Activity Through Youth Sports Programs: It's Social", *American Journal of Lifestyle Medicine*, Vol. 14/1, pp. 78-88, <https://doi.org/10.1177/1559827618754842>. [129]
- Hu, D. et al. (2021), "Factors That Influence Participation in Physical Activity in School-Aged Children and Adolescents: A Systematic Review from the Social Ecological Model Perspective", *Int J Environ Res Public Health*, Vol. 18/6, p. 3147, <https://doi.org/10.3390/ijerph18063147>. [68]
- Hu, D. et al. (2024), "A comparative study of the physical activity guidelines for children and adolescents from five countries and WHO", *Front. Public Health*, Vol. 12, <https://doi.org/10.3389/fpubh.2024.1421843>. [171]
- Hyde, G. (2024), *Raising the healthiest generation in history: why it matters where children and young people live*, Town and Country Planning Association (TCPA), <https://www.tcpa.org.uk/wp-content/uploads/2024/11/Raising-the-healthiest-generation-in-history-Accessible-version.pdf> (accessed on 10 April 2025). [145]
- Institut Metròpoli (2023), *Recerca urbana per transformar [Urban Research to Transform]*, Anuari Metropolità de Barcelona 2023 [Barcelona Metropolitan Yearbook 2023], https://institutinfancia.cat/wp-content/uploads/2023/12/ANUARI_IERMB_2023_article_IAB.pdf (accessed on 14 April 2025). [218]
- Isha, A. and G. Raheja (2022), "Laws, Disability Social Work and Social Inclusion Strategies", *TISS Journal of Disability Studies and Research*, Vol. 2/2, pp. 80-112, <https://tiss.ac.in/uploads/TISS%20Journal%20of%20Disability%20Studies%20and%20Research,%20Vol-II,%20Issue%20-II%20Dec%202022%20FOR%20WEB.pdf>. [240]
- ITF (2024), *Road Safety Annual Report 2024*, OECD Publishing, Paris, <https://www.itf-oecd.org/sites/default/files/docs/irtad-road-safety-annual-report-2024.pdf> (accessed on 19 May 2025). [78]
- James, J. et al. (2023), "The Effects of Physical Activity on Academic Performance in School-Aged Children: A Systematic Review", *Children*, Vol. 10/6, p. 1019, <https://doi.org/10.3390/children10061019>. [9]

- Jaymes, E. and C. Webster (2023), “A Whole-of-School Approach to Physical Activity Promotion: The Case of One Secondary School in England”, *Journal of Teaching in Physical Education*, Vol. 43/1, pp. 142–151, <https://doi.org/10.1123/jtpe.2022-0289>. [91]
- Jerebine, A. et al. (2022), ““All the fun stuff, the teachers say, ‘that’s dangerous!’” Hearing from children on safety and risk in active play in schools: a systematic review”, *Int J Behav Nutr Phys Act*, Vol. 19/72, <https://doi.org/10.1186/s12966-022-01305-0>. [30]
- Kärmeniemi, . et al. (2018), “The build environment as a determinant of physical activity: a systematic review of longitudinal studies and natural experiences”, *Ann Behav Med*, Vol. 52/3, pp. 239-251, <https://doi.org/10.1093/ABM/KAX043>. [133]
- Kati, I. and A. Summanen (2019), *Liikkuva koulu -ohjelman kärkihankekauden 2015—2018 ulkoinen arviointi*, Valtion Liikuntaneuvoston Julkaisuja 2019:4, <https://www.liikuntaneuvosto.fi/wp-content/uploads/2019/08/Liikkuva-koulu-arviointi-2019-nettiversio.pdf> (accessed on 3 April 2025). [261]
- Kennedy, S. et al. (2021), “Implementation at-scale of school-based physical activity interventions: a systematic review utilizing the RE-AIM framework”, *Obes Rev*, Vol. 22/7, p. e13184, <https://doi.org/10.1111/obr.13184>. [186]
- Klepac Pogrmilovic, B. et al. (2019), “The development of the Comprehensive Analysis of Policy on Physical Activity (CAPPA) framework”, *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 16/1, p. 60, <https://doi.org/10.1186/s12966-019-0822-5>. [152]
- Klepac Pogrmilovic, B. et al. (2020), “National physical activity and sedentary behaviour policies in 76 countries: availability, comprehensiveness, implementation, and effectiveness”, *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 17/1, p. 116, <https://doi.org/10.1186/s12966-020-01022-6>. [153]
- Klinker, C. et al. (2014), “Using accelerometers and global positioning system devices to assess gender and age differences in children’s school, transport, leisure and home based PA.”, *International Journal of Behavioral Nutrition and PA*, Vol. 11/8. [80]
- Kokko, S. et al. (2016), “Piecing the puzzle together: case studies of international research in health-promoting sports clubs”, *Global Health Promotion*, Vol. 23/1, pp. 75-84, <https://doi.org/10.1177/1757975915601615>. [119]
- Kokko, S. et al. (2018), “Does sports club participation contribute to physical activity among children and adolescents? A comparison across six European countries”, *Scandinavian Journal of Public Health*, Vol. 47/8, pp. 851-858, <https://doi.org/10.1177/1403494818786110>. [70]
- Kokko, S. et al. (2018), “Does sports club participation contribute to physical activity among children and adolescents? A comparison across six European countries”, *Scandinavian Journal of Public Health*, Vol. 47/8, pp. 851-858, <https://doi.org/10.1177/1403494818786110>. [121]
- Koorts, H. et al. (2018), “Implementation and scale up of population physical activity interventions for clinical and community settings: the PRACTIS guide”, *Int J Behav Nutr Phys Act*, Vol. 15/51, <https://doi.org/10.1186/s12966-018-0678-0>. [167]

- Koorts, H. et al. (2022), “Is level of implementation linked with intervention outcomes? Process evaluation of the TransformUs® intervention to increase children’s physical activity and reduce sedentary behaviour”, *International Journal of Behavioural Nutrition and Physical Activity*, Vol. 19/122, <https://doi.org/10.1186/s12966-022-01354-5>. [107]
- Koski, P. et al. (2017), *Sports Club for Health (SCforH) – updated guidelines for health-enhancing sports activities in a club setting*, Finnish Olympic Committee, https://www.scforh.info/wp-content/uploads/2021/05/Sports-Club-for-Health-Guidelines_en.pdf (accessed on 24 September 2025). [124]
- Kuhn, A. et al. (2021), “A Systematic Review of Multi-Component Comprehensive School Physical Activity Program (CSPAP) Interventions”, *American Journal of Health Promotion*, Vol. 35/8, pp. 1129-1149, <https://doi.org/10.1177/08901171211013281>. [98]
- Kwon, S. et al. (2015), “Active lifestyle in childhood and adolescence prevents obesity development in young adulthood”, *Obesity*, Vol. 23/12, pp. 2462-2469, <https://doi.org/10.1002/oby.21262>. [3]
- Lander, N. et al. (2019), “The feasibility and impact of embedding pedagogical strategies targeting physical activity within undergraduate teacher education: Transform-Ed!”, *Pilot and Feasibility Studies*, Vol. 5/125, <https://doi.org/10.1186/s40814-019-0507-5>. [111]
- Lander, N. et al. (2020), “Embedding active pedagogies within pre-service teacher education: implementation considerations and recommendations”, *Children*, Vol. 7/207, <https://doi.org/10.3390/children7110207>. [112]
- Lander, N. et al. (2023), “Equipping future teachers with innovative strategies that increase physical activity in the classroom: a hybrid implementation trial across three Australian universities”, *Frontiers in Education*, Vol. 8, p. 1093234, <https://doi.org/10.3389/educ.2023.1093234>. [113]
- Langille, J. and W. Rodgers (2010), “Exploring the influence of a social ecological model on school-based physical activity”, *Health Educ Behav*, Vol. 37/6, pp. 879-94, <https://doi.org/10.1177/1090198110367877>. [100]
- Larrinaga-Undabarrena, A. et al. (2023), “Physical Activity Levels and Sleep in Schoolchildren (6–17) with and without School Sport”, *International Journal of Environmental Research and Public Health*, Vol. 20/2, p. 1263, <https://doi.org/10.3390/ijerph20021263>. [7]
- Lee, E. et al. (2025), *2025 Position Statement on Active Outdoor Play*, AOP10 Steering Committee Group, <https://www.outdoorplaycanada.ca/aop10/> (accessed on 26 September 2025). [33]
- Lee, K. et al. (2021), “Many papers but limited policy impact? a bibliometric review of physical activity research”, *Transl J Am Coll Sports Med.*, Vol. 6/4, p. e000167. [188]
- Li, J. and W. Shao (2022), “Influence of Sports Activities on Prosocial Behavior of Children and Adolescents: A Systematic Literature Review”, *Int. J. Environ. Res. Public Health*, Vol. 19, p. 6484, <https://doi.org/10.3390/ijerph19116484>. [42]

- LIKES (2022), *Finland's Report Card 2022 on Physical Activity for Children and Youth*, LIKES Research Reports on Physical Activity and Health, https://www.theseus.fi/bitstream/handle/10024/785027/Report-Card_2022.pdf (accessed on 2 April 2025). [258]
- LIKES (2020), *National network to support schools' activities: The development of the Schools on the Move programme and implementation of key project*, LIKES Research Reports on Physical Activity and Health 355, https://schoolsonthemove.fi/wp-content/uploads/2020/06/KHR_EN_web.pdf (accessed on 3 April 2025). [259]
- LIKES (2020), *Towards More Active and Pleasant School Days: Interim Report on the Finnish Schools on the Move Programme 2015-2016*, LIKES Research Reports on Physical Activity and Health 335, https://schoolsonthemove.fi/wp-content/uploads/2020/01/LK_va%CC%88liraportti_111017_en.pdf (accessed on 4 April 2025). [260]
- Lisbon Municipality (2023), *Mãos ao Ar! Lisboa*, <https://www.lisboa.pt/temas/mobilidade/escolar/maos-ao-ar-lisboa> (accessed on 8 April 2025). [200]
- Lisbon Municipality (n.d.), *Programa Municipal de Comboios de Bicicletas [Municipal programme of Bike Trains]*, <https://www.lisboa.pt/temas/mobilidade/escolar/comboio-de-bicicletas> (accessed on 8 April 2025). [201]
- Lisbon Municipality (n.d.), *Programa Municipal de Comboios de Bicicletas [Municipal Programme of Bike Trains]*, <https://www.lisboa.pt/temas/mobilidade/escolar/comboio-de-bicicletas> (accessed on 17 June 2025). [203]
- Listerborn, C. et al. (2014), "Strategier för att hela en delad stad Samordnad stadsutveckling i Malmö [Strategies for healing a divided city Coordinated urban development in Malmö]", *Malmö University Publications in Urban Studies*, Vol. 16, <https://www.diva-portal.org/smash/get/diva2:1405215/FULLTEXT01.pdf> (accessed on 16 April 2025). [237]
- Lobczowska, K. et al. (2022), "Social, economic, political, and geographical context that counts: meta-review of implementation determinants for policies promoting healthy diet and physical activity", *BMC Public Health*, on behalf of Policy Evaluation Network (PEN) Consortium, p. 10055, <https://doi.org/10.1186/s12889-022-13340-4>. [176]
- Lobczowska, K. et al. (2022), "Frameworks for implementation of policies promoting healthy nutrition and physically active lifestyle: systematic review", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 19/1, <https://doi.org/10.1186/s12966-021-01242-4>. [177]
- Löf, M. et al. (2022), *Sweden Report Card 2022*, <https://www.activehealthykids.org/wp-content/uploads/2024/05/sweden-report-card-long-form-2022.pdf> (accessed on 16 April 2025). [234]
- Loh, V. et al. (2024), "Active travel, public transport and the built environment in youth: Interactions with perceived safety, distance to school, age and gender", *Journal of Transport & Health*, Vol. 38, p. 101895, <https://doi.org/10.1016/j.jth.2024.101895>. [75]

- London Sport (2025), *London Needs More Ball Games*, <https://londonsport.org/our-events/moreballgames/> (accessed on 10 April 2025). [146]
- Lopes, F., R. Cordovil and C. & Neto (2018), “Independent Mobility and Social Affordances of Places for Urban Neighborhoods: A Youth-Friendly Perspective”, *Front Psychol*, Vol. 9, p. 2198, <https://doi.org/10.3389/fpsyg.2018.02198>. [39]
- Love, R., J. Adams and E. van Sluijs (2019), “Are school-based physical activity interventions effective and equitable? A meta-analysis of cluster randomized controlled trials with accelerometer-assessed activity”, *Obes Rev*, Vol. 20/6, pp. 859-870, <https://doi.org/10.1111/obr.12823>. [115]
- Macauley, T. (2022), “Youth participation in policy-making processes in the United Kingdom: a scoping review of the literature”, *Journal of Community Practice*, Vol. 30/2, pp. 203-224, <https://doi.org/10.1080/10705422.2022.2073308>. [163]
- Madigan, S. et al. (2022), “Assessment of Changes in Child and Adolescent Screen Time During the COVID-19 Pandemic: A Systematic Review and Meta-analysis”, *JAMA Pediatr*, Vol. 176/12, pp. 1188–1198, <https://doi.org/10.1001/jamapediatrics.2022.4116>. [27]
- Matos, R. et al. (2021), “Parents’ and Children’s (6–12 Years Old) Physical Activity Association: A Systematic Review from 2001 to 2020.”, *International Journal of Environmental Resesearch and Public Health*, Vol. 18/23, p. 12651, <https://doi.org/10.3390/ijerph182312651>. [83]
- Mazzoli, E. et al. (2021), “Effects of classroom-based active breaks on cognition, sitting and on-task behaviour in children with intellectual disability: a pilot study”, *Journal of Intellectual Disability Research*, Vol. 65/5, pp. 464-488. [109]
- McCormack, M. et al. (2023), “Availability of Recreation Facilities and Parks In Relation to Adolescent Participation in Organized Sports and Activity Programs.”, *J Healthy Eat Act Living*, Vol. 3/1, pp. 19-35. [61]
- McGann, J. et al. (2020), ““...The Way That You Do It”: An Exploratory Study Investigating a Process- versus Outcome-Oriented Approach to School-Based Physical Activity Promotion.”, *Advances in Physical Education*, Vol. 10, pp. 262-281, <https://doi.org/10.4236/ape.2020.103022>. [196]
- McGann, J. et al. (2020), “Teacher experiences implementing the ‘Active School Flag’ initiative to support physically active school communities in Ireland”, *Irish Educational Studies*, Vol. 41/2, pp. 271–293, <https://doi.org/10.1080/03323315.2020.1794926>. [96]
- McHugh, C. et al. (2020), “The impact of the world health organization health promoting schools framework approach on diet and physical activity behaviours of adolescents in secondary schools: a systematic review”, *Public Health*, Vol. 182, pp. 116–124, <https://doi.org/10.1016/j.puhe.2020.02.006>. [187]
- McLaughlin, M. et al. (2024), “Process Evaluation of a Scaled-Up School-Based Physical Activity Program for Adolescents: Physical Activity 4 Everyone”, *Journal of Physical Activity and Health*, Vol. 21/8, pp. 741-755, <https://doi.org/10.1123/jpah.2024-0038>. [190]

- McLeroy, K. et al. (1988), "An ecological perspective on health promotion programs", *Health Educ Q.*, Vol. 15/4, pp. 351-377, <https://doi.org/10.1177/109019818801500401>. [65]
- McMullen, J., J. Kallio and T. Tammelin (2022), "Physical activity opportunities for secondary school students: International best practices for whole-of-school physical activity programs", *European Physical Education Review*, Vol. 28/4, pp. 890-905, <https://doi.org/10.1177/1356336X221092281>. [97]
- Meganck, J. et al. (2014), "Youth sports clubs' potential as health-promoting setting: Profiles, motives and barriers", *Health Education Journal*, Vol. 74/5, pp. 531-543, <https://doi.org/10.1177/0017896914549486>. [120]
- Meganck, J., J. Seghers and J. Scheerder (2016), "Exploring strategies to improve the health promotion orientation of Flemish sports clubs", *Health Promotion International*, p. daw004, <https://doi.org/10.1093/heapro/daw004>. [122]
- Mehtälä, M. et al. (2014), "A socio-ecological approach to physical activity interventions in childcare: a systematic review", *Int J Behav Nutr Phys Act*, Vol. 11/22, <https://doi.org/10.1186/1479-5868-11-22>. [67]
- Messing, S. et al. (2019), "How Can Physical Activity Be Promoted Among Children and Adolescents? A Systematic Review of Reviews Across Settings", *Frontiers in Public Health*, Vol. 7, <https://doi.org/10.3389/fpubh.2019.00055>. [156]
- Michael, R. et al. (2019), "Facilitators and Barriers to Movement Integration in Elementary Classrooms: A Systematic Review", *Res Q Exerc Sport*, Vol. 90/2, pp. 151-162, <https://doi.org/10.1080/02701367.2019.1571675>. [102]
- Milton, K. et al. (2020), "Maximising the impact of global and national physical activity guidelines: the critical role of communication strategies", *British Journal of Sports Medicine*, Vol. 54, pp. 1463-1467, <https://doi.org/10.1136/bjsports-2020-102324>. [14]
- Milton, K. et al. (2020), "Maximising the impact of global and national physical activity guidelines: the critical role of communication strategies", *British Journal of Sports Medicine*, Vol. 54/24, <https://doi.org/10.1136/bjsports-2020-102324>. [169]
- Ministry of Housing, Communities and Local Government (2020), *Planning for the Future*, Government White Paper, <https://assets.publishing.service.gov.uk/media/601bce418fa8f53fc149bc7d/MHCLG-Planning-Consultation.pdf> (accessed on 14 April 2025). [263]
- Miquel, A. (2022), *Superblock Barcelona: Integrating Play Strategies within City Planning*, Barcelona Municipality, https://resilientcitiesnetwork.org/downloadable_resources/UR/SP/2022/220504_play_Barcelona2.pdf (accessed on 11 April 2025). [207]
- Mooses, K. and M. Kull (2020), "The participation in organised sport doubles the odds of meeting physical activity recommendations in 7–12-year-old children", *European Journal of Sport Science*, Vol. 20/4, pp. 563-569, <https://doi.org/10.1080/17461391.2019.1645887>. [55]

- Morgan, P. et al. (2019), “Engaging Fathers to Increase Physical Activity in Girls: The ‘Dads And Daughters Exercising and Empowered’ (DADEE) Randomized Controlled Trial”, *Annals of Behavioral Medicine*, Vol. 53/1, pp. 39-52, <https://doi.org/10.1007/s10826-020-01837-8>. [225]
- Morgan, P. et al. (2023), “Feasibility of ‘Daughters and Dads Cricket’: A programme targeting fathers to improve daughters’ engagement and skills in cricket”, *International Journal of Sports Science & Coaching*, pp. 1-15, <https://doi.org/10.1177/17479541231169096>. [231]
- Morgan, P. et al. (2021), “Establishing Effectiveness of a Community-based, Physical Activity Program for Fathers and Daughters: A Randomized Controlled Trial”, *Annals of Behavioral Medicine*, Vol. 56/7, pp. 698-711, <https://doi.org/10.1093/abm/kaab056>. [228]
- Mueller, N. et al. (2020), “Changing the urban design of cities for health: The superblock model”, *Environment International*, Vol. 134, <https://doi.org/10.1016/j.envint.2019.105132>. [214]
- Muñoz-Galiano, I. et al. (2020), “Influence of the Parental Educational Level on Physical Activity in Schoolchildren”, *Sustainability*, Vol. 12/9, p. 3920, <https://doi.org/10.3390/su12093920>. [62]
- Nally, S. et al. (2024), ““You’ve got a lot of big hurdles to jump”: A qualitative investigation into parents’ and teachers’ perceptions of the factors influencing children’s physical activity”, *Eur J Public Health*, Vol. 34/2, <https://doi.org/10.1093/eurpub/ckae114.031>. [130]
- Naylor, P. et al. (2015), “Implementation of school based physical activity inter”, *Prev Med*, Vol. 72, pp. 95–115, <https://doi.org/10.1016/j.ypmed.2014.12.034>. [184]
- Neil-Sztramko, S., H. Caldwell and M. Dobbins (2021), “School-based physical activity programs for promoting physical activity and fitness in children and adolescents aged 6 to 18”, *Cochrane Database Syst Rev*, Vol. 9/9, <https://doi.org/10.1002/14651858.CD007651.pub3>. [13]
- Neveux, M., S. Ayuandini and K. Klepp (2019), “You(th) matters: co-creating policies to tackle obesity”, *Eurohealth*, Vol. 25/3, <https://iris.who.int/handle/10665/332513> (accessed on 22 May 2025). [164]
- Nieuwenhuijsen, M. et al. (2024), “The Superblock model: A review of an innovative urban model for sustainability, liveability, health and well-being”, *Environmental Research*, Vol. 251/1, <https://doi.org/10.1016/j.envres.2024.118550>. [208]
- Nieuwenhuijsen, M. and H. Khreis (eds.) (2019), *Superblocks for the Design of New Cities and Renovation of Existing Ones: Barcelona’s Case*, Springer International Publishing. [209]
- OECD (2025), *Everybody Cares About Using Education Research Sometimes: Perspectives of Knowledge Intermediaries*, OECD Publishing, Paris, <https://doi.org/10.1787/5ef88972-en>. [181]
- OECD (2025), *What are the trade-offs between learning and digital leisure outside of school?*, OECD Publishing, Paris, <https://doi.org/10.1787/b7aa2c22-en>. [29]
- OECD (2024), *What Does Child Empowerment Mean Today?: Implications for Education and Well-being*, Educational Research and Innovation, OECD Publishing, Paris, <https://doi.org/10.1787/8f80ce38-en>. [270]

- OECD (2023), *Education at a Glance 2023: OECD Indicators*, OECD Publishing, Paris, [49]
<https://doi.org/10.1787/e13bef63-en>.
- OECD (2023), *PISA 2022 Results (Volume I): The State of Learning and Equity in Education*, PISA, OECD Publishing, Paris, [52]
<https://doi.org/10.1787/53f23881-en>.
- OECD (2021), “All the lonely people: Education and loneliness”, *Trends Shaping Education Spotlights*, No. 23, OECD Publishing, Paris, [255]
<https://doi.org/10.1787/23ac0e25-en>.
- OECD (2019), *Health at a Glance 2019: OECD Indicators*, OECD Publishing, Paris, [148]
<https://doi.org/10.1787/4dd50c09-en>.
- OECD (2019), *Making Physical Education Dynamic and Inclusive for 2030: International Curriculum Analysis*, OECD Publishing, Paris, [6]
<https://doi.org/10.1787/7abe6b02-en>.
- OECD (2019), *PISA 2018 Results (Volume III): What School Life Means for Students’ Lives*, PISA, OECD Publishing, Paris, [28]
<https://doi.org/10.1787/acd78851-en>.
- OECD (2019), *The Heavy Burden of Obesity: The Economics of Prevention*, OECD Health Policy Studies, OECD Publishing, Paris, [4]
<https://doi.org/10.1787/67450d67-en>.
- OECD (2017), *PISA 2015 Results (Volume III): Students’ Well-Being*, PISA, OECD Publishing, Paris, [43]
<https://doi.org/10.1787/9789264273856-en>.
- OECD (1997), *Education Policy Analysis 1997*, OECD Publishing, Paris, [179]
<https://doi.org/10.1787/epa-1997-en>.
- OECD/European Commission (2024), *Health at a Glance: Europe 2024: State of Health in the EU Cycle*, OECD Publishing, Paris, [149]
<https://doi.org/10.1787/b3704e14-en>.
- OECD/WHO (2023), *Step Up! Tackling the Burden of Insufficient Physical Activity in Europe*, OECD Publishing, Paris, [88]
<https://doi.org/10.1787/500a9601-en>.
- Okraszewska, R. et al. (2022), “Sustainable Urban Mobility Plans: implementation process and indicators to evaluate effects on physical activity”, *European Journal of Public Health*, on behalf of the PEN consortium, pp. iv101–iv106, [160]
<https://doi.org/10.1093/eurpub/ckac069>.
- on behalf of DE-PASS (2024), “DE-PASS best evidence statement (BEST): determinants of adolescents’ device-based physical activity and sedentary behaviour in settings: a systematic review and meta-analysis”, *BMC Public Health*, Vol. 24/1, [90]
<https://doi.org/10.1186/s12889-024-19136-y>.
- on behalf of the International Children’s Accelerometry Database (ICAD) Collaborators (2021), “Children’s moderate-to-vigorous physical activity on weekdays versus weekend days: a multi-country analysis”, *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 18/1, [117]
<https://doi.org/10.1186/s12966-021-01095-x>.

- Ooms, L., M. Kruijsbergen and D. Collard (2021), "Can Health-Enhancing Sporting Programs in Sports Clubs Lead to a Settings-Based Approach? An Exploratory Qualitative Study", *Int J Environ Res Public Health*, Vol. 18/11, p. 6082, <https://doi.org/10.3390/ijerph18116082>. [128]
- Owen, K. et al. (2022), "Fair play? Participation equity in organised sport and physical activity among children and adolescents in high income countries: a systematic review and meta-analysis", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 19/27, <https://doi.org/10.1186/s12966-022-01263-7>. [60]
- Padial-Ruz, R. et al. (2021), "Determining Factors in the Use of Urban Parks That Influence the Practice of Physical Activity in Children: A Systematic Review", *International Journal of Environmental Research and Public Health*, Vol. 18/7, p. 3648, <https://doi.org/10.3390/ijerph18073648>. [144]
- Parrish, A. et al. (2020), "Comparing and assessing physical activity guidelines for children and adolescents: a systematic literature review and analysis", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 17/89, <https://doi.org/10.1186/s12966-020-00993-w>. [170]
- participating PLaTO-Net members (2022), "Play, Learn, and Teach Outdoors—Network (PLaTO-Net): terminology, taxonomy, and ontology", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 19/1, <https://doi.org/10.1186/s12966-022-01294-0>. [23]
- Pellegrini, A. and P. Smith (1998), "Physical Activity Play: The Nature and Function of a Neglected Aspect of Play", *Child Development*, Vol. 69/3, pp. 577–598, <https://doi.org/10.1111/j.1467-8624.1998.tb06226.x>. [24]
- Pereira, J. et al. (2024), "Associations between outdoor play features and children's behavior and health: A systematic review", *Health & Place*, Vol. 87, p. 103235, <https://doi.org/10.1016/j.healthplace.2024.103235>. [136]
- Pizarro, A. et al. (2023), "Results from Portugal's 2022 report card on physical activity for children and youth", *Journal of Exercise Science & Fitness*, Vol. 21/3, pp. 280–285, <https://doi.org/10.1016/j.jesf.2023.05.002>. [199]
- Play Australia (2020), *How Play Streets supports the development of physical literacy in children*, Centre for Sport and Social Impact, La Trobe University, https://www.playaustralia.org.au/sites/default/files/How-Play-Streets-supports-the-development-of-physical-literacy-in-children-a-review-202106_0.pdf (accessed on 11 April 2025). [252]
- Play England (2023), *Trends in Children's Street Play: Findings from the 2022 Survey*, <https://static1.squarespace.com/static/609a5802ba3f13305c43d352/t/64ca676f4c818d6700d320ae/1690986358314/Street+Play+Report+July+2023+Final2.pdf> (accessed on 10 April 2025). [249]
- Play England (2016), *Why Temporary Street Closures for Play Make Sense for Public Health*, <https://static1.squarespace.com/static/609a5802ba3f13305c43d352/t/60c333a51d4d6048026f36fe/1623405481923/Street+Play+Public+Health+Bristol+U.pdf> (accessed on 10 April 2025). [250]

- Playing Out (2023), *Resident Survey Report 2023*, <https://playingout.net/wp-content/uploads/2023/12/2023-Resident-Survey-Report.pdf> (accessed on 11 April 2025). [253]
- Playing Out (2022), *Playout Out Manual*, <https://playingout.net/wp-content/uploads/2022/01/Playing-Out-manual.pdf> (accessed on 11 April 2025). [254]
- Podestà, L. (2023), *Gender Equality in Urban Planning: A crucial factor for real inclusive development*, Malmö University, <https://www.diva-portal.org/smash/get/diva2:1764964/FULLTEXT02> (accessed on 22 April 2025). [241]
- Poitras, V. et al. (2016), “Systematic review of the relationships between objectively measured physical activity and health indicators in school-aged children and youth”, *Applied Physiology, Nutrition, and Metabolism*, Vol. 41/6, pp. S197-S239, <https://doi.org/10.1139/apnm-2015-0663>. [5]
- Pollock, E. et al. (2020), “Impact of a father-daughter physical activity intervention: An exploration of fathers’ experiences”, *Journal of Child and Family Studies*, pp. 1-12, <https://doi.org/10.1007/s10826-020-01837-8>. [227]
- Pollock, E. et al. (2023), “Effects of a Father–Daughter Physical Activity Intervention Delivered by Trained Facilitators in the Community Setting on Girls’ Social-Emotional Well-Being: A Randomized Controlled Trial.”, *Developmental Psychology*, Vol. 59/10, <https://doi.org/10.1037/dev0001609>. [229]
- Public Art Agency Sweden (n.d.), *Kepsen (The Cap)*, <https://publicartagencySweden.com/konst/kepsen-the-cap-in-purple/> (accessed on 1 July 2025). [239]
- Puig-Ribera, A. et al. (2022), “Use of the Superblock model for promoting physical activity in Barcelona: a one-year observational comparative study”, *Archives of Public Health*, Vol. 257/80, pp. 2049-3258, <https://doi.org/10.1186/s13690-022-01005-y>. [216]
- Quintana Vargas, A. (2024), *Pedestrian-first corridors : studying the streetscapes of Barcelona’s Superilla project*, <https://doi.org/10.26153/tsw/58446> (accessed on 14 April 2025). [215]
- Ramos-Munell, J. et al. (2024), “Tracking of MVPA across childhood and adolescence”, *J Sci Med Sport*, Vol. 27/6, pp. 396-401, <https://doi.org/10.1016/j.jsams.2024.03.006>. [48]
- Recchia, F. et al. (2023), “Physical Activity Interventions to Alleviate Depressive Symptoms in Children and Adolescents: A Systematic Review and Meta-analysis”, *JAMA Pediatr*, Vol. 177/2, pp. 132-140, <https://doi.org/10.1001/jamapediatrics.2022.5090>. [8]
- Remmers, T. et al. (2024), “Investigating young children’s physical activity through time and place”, *International Journal of Health Geographics*, Vol. 23/1, p. 12, <https://doi.org/10.1186/s12942-024-00373-8>. [81]
- Sahlqvist, S. et al. (2024), “Understanding parental support for infrastructure and policy changes that encourage active travel among children”, *Journal of Transport & Health*, Vol. 39, p. 101932, <https://doi.org/10.1016/j.jth.2024.101932>. [79]

- Sallis, J. et al. (2006), "An Ecological Approach to Creating Active Living Communities", *Annual Review of Public Health*, Vol. 27, pp. 297-322, <https://doi.org/10.1146/annurev.publhealth.27.021405.102100>. [66]
- Salmon, J. et al. (2023), "Transform-Us! cluster RCT: 18-month and 30-month effects on children's physical activity, sedentary time and cardiometabolic risk markers", *British Journal of Sports Medicine*, Vol. 57, pp. 311-319, <https://doi.org/10.1136/bjsports-2022-105825>. [105]
- Salmon, J. et al. (2011), "A cluster-randomized controlled trial to reduce sedentary behavior and promote physical activity and health of 8-9 year olds: the Transform-Us! study.", *BMC Public Health*, Vol. 11/79, <https://doi.org/10.1186/1471-2458-11-759>. [104]
- Salmon, J. and A. Timperio (2007), "Prevalence, trends and environmental influences on child and youth physical activity", *Med Sport Sci.*, Vol. 50, pp. 183-199, <https://doi.org/10.1159/000101391>. [132]
- Sandström, I., S. Ericsson and P. Hedvall (2024), "Gendered sustainability: Are public spaces designed for girls good for everyone?: Examining female participation as a strategy for inclusive public space", *Cities*, Vol. 149, p. 104906, <https://doi.org/10.1016/j.cities.2024.104906>. [235]
- Save the Children UK (2022), *Only One In Four Children Play Out Regularly On Their Street Compared To Almost Three-Quarters Of Their Grandparents Generation*, Save the Children UK, <https://www.savethechildren.org.uk/news/media-centre/press-releases/2022/children-today-far-less-likely-to-play-outside-than-their-grandparents#:~:text=London%2004%20August%202022%20-%20FEWER%20children%20are,compared%20to%2071%25%20of%20the%20baby%20boom> (accessed on 10 April 2025). [147]
- Scanlon, D., J. Lorusso and M. Viczko (2023), "Understanding (and extending) the conceptual boundaries of policy research in physical education: A scoping review", *European Physical Education Review*, Vol. 30/3, pp. 414-434, <https://doi.org/10.1177/1356336X231210393>. [151]
- Scannell, L. and R. Gifford (2010), "Defining place attachment: A tripartite organizing framework", *Journal of Environmental Psychology*, Vol. 30, pp. 1-10, <https://doi.org/10.1016/j.jenvp.2009.09.006>. [141]
- Scheller, D. et al. (2024), "Physical activity through place attachment: Understanding perceptions of children and adolescents on urban places by using photovoice and walking interviews", *Health & Place*, Vol. 90, p. 103361, <https://doi.org/10.1016/j.healthplace.2024.103361>. [143]
- Schools on the Move (2020), *Creating an Active School Culture: More active and Pleasant School Days*, https://schoolsonthemove.fi/wp-content/uploads/2020/01/KV-esite_210x210_nettti.pdf (accessed on 3 April 2025). [262]
- Selberg, T. (2022), *Dansbana! in the context: performative process for inclusive public space*, Lusófona University, [https://research.ulusofona.pt/ws/portalfiles/portal/34592526/33%20\(1\).pdf](https://research.ulusofona.pt/ws/portalfiles/portal/34592526/33%20(1).pdf) (accessed on 17 April 2025). [236]

- Shaw, B. et al. (2012), *Children's independent mobility: a comparative study in England and Germany (1971-2010)*, Policy Studies Institute, University of Westminster, https://westminsterresearch.westminster.ac.uk/download/033209d304f45e5029d9987458e67a06070a44ba5ef7bc5abb981e5a351efe82/5212407/PSI_finalreport_2012.pdf (accessed on 10 April 2025). [246]
- Shtebunaev, S. (2021), *10 Reasons*, Commissioned by Grosvenor Britain & Ireland, <https://grosvenorlive.b-cdn.net/live/grosvenor/media/property-uk-images/uk%20documents/10-reasons-final.pdf> (accessed on 15 April 2025). [265]
- Shull, E. et al. (2020), "Sport participation, physical activity and sedentary behavior in the transition from middle school to high school", *Journal of Science and Medicine in Sport*, Vol. 23/4, pp. 385-389, <https://doi.org/10.1016/j.jsams.2019.10.017>. [56]
- Silva, A. et al. (2025), "Mapping Evidence on Integrated 24-Hour Movement Behaviors in Children and Adolescents: A Scoping Review of Reviews", *Children*, Vol. 12/260, <https://doi.org/10.3390/children12030260>. [173]
- Silva, D. et al. (2024), "Physical Activity Report Card Indicators and the United Nations Sustainable Development Goals: Insights From Global Matrix 4.0.", *Journal of Physical Activity and Health*, Vol. 21/12, pp. 1372-1381, <https://doi.org/10.1123/jpah.2024-0442>. [221]
- Simón-i-Mas, G. and J. Honey-Rosés (2024), "A global overview of Bike Bus: A journey toward a child-friendly city", *International Journal of Sustainable Transportation*, Vol. 18/12, pp. 1012–1025, <https://doi.org/10.1080/15568318.2024.2432654>. [198]
- Smith, P. and J. St George (2022), "Play fighting (rough-and-tumble play) in children: developmental and evolutionary perspectives", *International Journal of Play*, Vol. 12/1, pp. 113-126, <https://doi.org/10.1080/21594937.2022.2152185>. [26]
- Somerset, S. and D. Hoare (2018), "Barriers to voluntary participation in sport for children: a systematic review", *BMC Pediatrics*, Vol. 18/1, <https://doi.org/10.1186/s12887-018-1014-1>. [45]
- Sport Austria (2025), *Übungsleiter:innen-Ausbildung [Instructor Training]*, <https://www.sportaustria.at/de/service-center/ausbildungs-und-fortbildungsangebot/uebungsleiterinnen-ausbildung> (accessed on 23 April 2025). [245]
- SportUnion Wien (n.d.), *Daughters and Dads Active and Empowered – Austria*, <https://sportunion.at/wien/dadae-austria/> (accessed on 10 April 2025). [233]
- Stanley, I. et al. (2022), "Health surveillance indicators for diet and physical activity: what is available in European data sets for policy evaluation?", *European Journal of Public Health*, the PEN consortium, pp. 571–577, <https://doi.org/10.1093/eurpub/ckac043>. [182]
- Steinbach, D. (2014), *Kinder gesund bewegen - 01.05.2013 - 31.07.2014*, SPIN: Sport Innovation, https://www.fitsportaustria.at/download/files/%7BA670572C-B9DE-4522-B9D1-8252E1A33582%7D/KiGeBe_Evaluationsbericht2_Sept2014_Zsfg.pdf (accessed on 23 April 2025). [243]

- Stenning, A. (2020), *Tackling Loneliness with Resident-led Play Streets*, Playing out/ Newcastle University, <https://playingout.net/wp-content/uploads/2020/03/Tackling-Loneliness-with-Resident-Led-Play-Streets-Final-Report.pdf> (accessed on 11 April 2025). [256]
- Strain, T. et al. (2024), "National, regional, and global trends in insufficient physical activity among adults from 2000 to 2022: a pooled analysis of 507 population-based surveys with 5·7 million participants", *The Lancet Global Health*, Vol. 12/8, pp. 1232-1243, [https://doi.org/10.1016/S2214-109X\(24\)00150-5](https://doi.org/10.1016/S2214-109X(24)00150-5). [86]
- Su, D. et al. (2022), "Parental Influence on Child and Adolescent Physical Activity Level: A Meta-Analysis", *Int J Environ Res Public Health*, Vol. 19/24, p. 16861, <https://doi.org/10.3390/ijerph192416861>. [85]
- Sun, J. et al. (2023), "A Study on the Factors Influencing Physical Activity among Children and Adolescents under the "Double Reduction" Policy—Based on A Socio-Ecological Mode", *Social Medicine and Health Management*, Vol. 4, pp. 50-56, <https://doi.org/10.23977/socmhm.2023.040308>. [82]
- Sutherland, R. et al. (2016), "The Physical Activity 4 everyone cluster randomized trial: 2-year outcomes of a school", *American Journal of Preventive Medicine*, Vol. 51/2, pp. 195-205, <https://doi.org/10.1016/j.amepre.2016.02.020>. [189]
- Teufel, L. et al. (2024), *Evaluation der „Täglichen Bewegungseinheit“ [Evaluation of daily movement units]*, Gesundheit Österreich, https://jasmin.goeg.at/id/eprint/4160/1/T%C3%A4gliche%20Bewegungseinheit_2.Evaluationsbericht_bf.pdf (accessed on 23 April 2025). [244]
- Tiran, J. et al. (2023), *Literature review on superblocks' effects on urban realm*, TuneOurBlock: Transforming urban quarters to human scale environments: applying superblock concepts for different urban structures, <https://repositum.tuwien.at/bitstream/20.500.12708/212229/1/Tiran-2024-Literature%20review%20on%20Superblocks%20effects%20on%20the%20urban%20realm-vor.pdf> (accessed on 14 April 2025). [210]
- Tremblay, M. et al. (2015), "Position Statement on Active Outdoor Play", *International Journal of Environmental Research and Public Health*, Vol. 12/6, pp. 6475-6505, <https://doi.org/10.3390/ijerph12>. [32]
- Ubalde-López, M. et al. (2023), *Impact evaluation of school street calming measures in the city of Barcelona by the "Protegim les escoles" program, 2021 and 2022-2023*, ISGlobal, Institut de Ciència i Tecnologia Ambientals de la Universitat de Barcelona (ICTA-UAB), <https://www.isglobal.org/documents/d/quest/informe-protegim-les-escoles-pdf> (accessed on 11 April 2025). [205]
- Umeå Municipality (2019), *Gender, Power and Politics: Thirty Years of Gender Equality Work in Umeå Municipality*, Umeå Municipality, <https://www.umea.se/download/18.1e902c491847930967530bc/1669206644284/Gender%20power%20and%20politics.pdf> (accessed on 16 April 2025). [238]

- Urban Mobility Explained (2023), *How did a bike train become a city policy? Lisbon's Bike Train Programme*, <https://www.youtube.com/watch?v=dLPDank4GZo> (accessed on 8 April 2025). [202]
- Van Hoya, A. et al. (2023), "Health promoting sports federations: theoretical foundations and guidelines", *Front Public Health*, Vol. 11, p. 1147899, <https://doi.org/10.3389/fpubh.2023.1147899>. [123]
- Van Hoya, A. et al. (2021), "Capitalization of Health Promotion Initiatives within French Sports Clubs", *Int J Environ Res Public Health*, Vol. 18/3, p. 888, <https://doi.org/10.3390/ijerph18030888>. [126]
- Van Hoya, A. et al. (2024), "Implementation of the GAA 'healthy clubs project' in Ireland: a qualitative study using the Consolidated Framework for Implementation Research", *Health Promot Int*, Vol. 39/1, <https://doi.org/10.1093/heapro/daad191>. [127]
- Van Kann, D. et al. (2016), "Schoolyard Characteristics, Physical Activity, and Sedentary Behavior: Combining GPS and Accelerometry", *J Sch Health*, Vol. 86/12, pp. 913-921, <https://doi.org/10.1111/josh.12459>. [138]
- van Sluijs, E. et al. (2021), "Physical activity behaviours in adolescence: current evidence and opportunities for intervention", *Lancet*, Vol. 398/10298, pp. 429-442, [https://doi.org/10.1016/S0140-6736\(21\)01259-9](https://doi.org/10.1016/S0140-6736(21)01259-9). [54]
- van Sluijs, E. et al. (2021), "Physical activity behaviours in adolescence: current evidence and opportunities for intervention", *Lancet*, Vol. 398, pp. 429-442, [https://doi.org/10.1016/S0140-6736\(21\)01259-9](https://doi.org/10.1016/S0140-6736(21)01259-9). [131]
- Verjans-Janssen, S. et al. (2020), "Effects of the KEIGAAF intervention on the BMI z-score and energy balance-related behaviors of primary school-aged children", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 17/1, p. 105, <https://doi.org/10.1186/s12966-020-01012-8>. [99]
- Voice, Opportunity, Power (n.d.), *Toolkit Hub*, <https://voiceopportunitypower.com/toolkit-hub/> (accessed on 28 September 2025). [266]
- Volf, K. (2024), *Developing and utilising the physical activity environment policy index: a tool to advance the implementation of physical activity policy in Ireland.*, University of Limerick, Limerick, <https://doi.org/10.34961/researchrepository-ul.26412862.v1>. (accessed on 20 May 2025). [47]
- Volf, K. et al. (2022), "Evidence of the impact of sport policies on physical activity and sport participation: a systematic mixed studies review", *International journal of sport policy and politics*, Vol. 14/4, pp. 697-712. [154]
- Walker, S. and I. Clark (2023), *Make Space for Girls: The research background 2023*, https://cdn.prod.website-files.com/6398afa2ae5518732f04f791/63f60a5a2a28c570b35ce1b5_Make%20Space%20for%20Girls%20-%20Research%20Draft.pdf (accessed on 11 June 2025). [74]

- Webster, C. and N. Suzuki (2014), “Land of the Rising Pulse: A Social Ecological Perspective of Physical Activity Opportunities for Schoolchildren in Japan”, *Journal of Teaching in Physical Education*, Vol. 33/3, pp. 304–325, <https://doi.org/10.1123/jtpe.2014-0003>. [174]
- Wendt, J. et al. (2023), “Good practice recommendations on implementation evaluation for policies targeting diet, physical activity, and sedentary behaviour”, *BMC Public Health*, Vol. 23/1, p. 1259, <https://doi.org/10.1186/s12889-023-15775-9>. [178]
- Wendt, J. et al. (2023), “Barriers and facilitators to the adoption of physical activity policies in elementary schools from the perspective of principals: An application of the consolidated framework for implementation research—A cross-sectional study”, *Frontiers in Public Health*, Vol. 11, <https://doi.org/10.3389/fpubh.2023.935292>. [95]
- Westerbeek, H. and R. Eime (2021), “The Physical Activity and Sport Participation Framework—A Policy Model Toward Being Physically Active Across the Lifespan”, *Frontiers in Sports and Active Living*, Vol. 3, <https://doi.org/10.3389/fspor.2021.608593>. [46]
- WHO (2025), *Whole-of-school approach to the promotion of physical activity: using research, policy and practice to understand system's needs and structures*, Copenhagen: WHO Regional Office for Europe, <https://iris.who.int/server/api/core/bitstreams/47a58ee1-8cd9-4608-a26f-84a90f9a7631/content> (accessed on 26 September 2025). [10]
- WHO (2020), *WHO guidelines on physical activity and sedentary behaviour*, World Health Organization, <https://www.who.int/publications/i/item/9789240015128> (accessed on 9 May 2025). [12]
- WHO (2019), *WHO Guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age*, World Health Organization, <https://apps.who.int/iris/bitstream/handle/10665/311664/9789241550536-eng.pdf> (accessed on 9 May 2025). [11]
- Wintle, J. (2022), “Physical Education and Physical Activity Promotion: Lifestyle Sports as Meaningful Experiences”, *Educ. Sci.*, Vol. 12, p. 181, <https://doi.org/10.3390/educsci12030181>. [44]
- Women in Sport (n.d.), *Daughters and Dads (DADs)*, <https://womeninsport.org/creating-change/piloting-solutions/daughters-and-dads-active-and-empowered-programme/> (accessed on 10 April 2025). [232]
- Woods, C. et al. (2021), “The evidence for the impact of policy on physical activity outcomes within the school setting: a systematic review”, *Journal of sport and health science*, Vol. 10/3, pp. 263-276, <https://doi.org/10.1016/j.jshs.2021.01.006>. [155]
- Young, M. et al. (2019), “Impact of a Father-Daughter Physical Activity Program on Girls’ Social-Emotional Well-being: A Randomized Controlled Trial.”, *Journal of Consulting and Clinical Psychology*, Vol. 87/3, pp. 294-307, <https://doi.org/10.1037/ccp0000374>. [226]

- ZCD Architects (n.d.), *Earls Court Masterplan*, Voice, Opportunity, Power, [267]
<https://voiceopportunitypower.com/uploads/case-studies/Earls-Court-Masterplan.pdf>
(accessed on 16 April 2025).
- Żukowska, J. et al. (2022), “Which transport policies increase physical activity of the whole of [159]
society? A systematic review”, *Journal of Transport & Health*, Vol. 27, p. 101488,
<https://doi.org/10.1016/j.jth.2022.101488>.