

NATIONAL HEART ALLIANCE

Physical Activity, Young People and the Physical Environment

Summary of Evidence

November 2006

National Heart Alliance Members

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Executive Summary

- Regular participation in physical activity provides physical, social and mental benefits to young people's health and well-being.
- Young people should participate in physical activity that is developmentally appropriate, enjoyable and of at least moderate intensity for one hour per day.
- Many Irish children and adolescents are not achieving sufficient physical activity for health. Rates of walking and cycling to school are steadily decreasing.
- One in every five young people is overweight or obese.
- Physical inactivity and obesity create a tangible economic burden on the health system.
- Provision of a supportive environment for physical activity and active living can have sustainable, population wide effects. Research has established the relationship between the physical environment and physical activity among youth:
 - The presence of paths, walking trails and bike lanes/tracks are associated with more walking and cycling among youth.
 - Well-connected, permeable communities increase travel by foot among adults, however youth use poorly connected streets for play and physical activity. Walkways between cul-de-sacs represent a design compromise so both on-street play and neighbourhood walking are achievable.
 - Parental concerns regarding traffic volume, traffic speed and limited lightings/crossings restrict children's walking, cycling and play.
 - Girls are more likely to perceive poor levels of personal safety and be less active as a result.
 - Adolescents are more active in litter-free environments with trees and interesting features to look at, and less likely to walk/cycle to school in the presence of exhaust fumes and other bad smells.
 - Young people are more likely to walk or cycle and be physically active in densely populated areas with lots of destinations (such as shops) and public transport.
 - The location of schools in or near residential areas is paramount to active commuting. As distance from school increases, less children and adolescents walk or cycle to school.
 - Young people are more active when they have convenient, good quality, affordable facilities for physical activity and play. Provision of facilities for the preferred activities of adolescent girls is important.
- Changes to the physical environment have resulted in increased physical activity:
 - Infrastructural changes to the environment have resulted in increased walking and cycling to school as part of Safe Routes to School programs.
 - Road safety initiatives such as the introduction of traffic-calming measures, better facilities for walking and cycling, urban design sensitive to the needs of non-motorists, restrictions on use of motor vehicles, traffic education and strict enforcement of traffic regulations increased the use of streets by pedestrians and cyclists. The introduction of home zones increased children's outdoor activity including walking, cycling and playing in the street.
- Intervention is required through environmental, policy and legislative changes. The subgroup encourages the development of policy recommendations by the National Heart Alliance, in collaboration with key stakeholders in this area.

Physical Activity, Young People and the Physical Environment

Introduction

The National Heart Alliance (NHA) is an independent non-governmental organisation, which aims to increase co-operation among organisations involved in the fight against heart disease and to recommend appropriate policies and approaches to prevent heart disease.

This summary of evidence has been prepared by the NHA with a view to propose policy options to provide a more supportive environment for the promotion of physical activity, particularly among young people. For the purposes of this paper, young people are defined as children aged 0-18. It is acknowledged that where positive habits in relation to physical activity are established early in life, the recommendations made by this paper will apply right across the life span. In addition, recommendations to improve physical environments will influence people of all ages that use or inhabit those environments.

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Justification and Recommendations for Physical Activity

Rationale for Physically Active Children and Young People

Physical activity can be defined as any bodily movement produced by contraction of skeletal muscle that subsequently produces energy expenditure ¹. Regular participation in physical activity provides physical, social and mental benefits to young people's health and well-being. Physiologically, regular physical activity can help in growth and development through strengthening of the musculoskeletal system, body fat maintenance and protection from some chronic diseases in the future. Through participation in team sports children learn social and moral development. A positive experience of physical activity can reduce anxiety, increase self-esteem and confidence and increase the likelihood of lifelong participation. Physical activity is especially important for young people as research shows that many chronic diseases have their genesis during childhood or adolescence ², and that behaviours that begin in childhood lead to chronic health conditions in adults ³. In this manner physical inactivity creates a tangible economic burden on the health system. Cost benefit analyses indicate that in Canada, 21,000 lives are lost prematurely each year due to inactivity, and 2.5% or \$2.1 billion of total direct health care costs in 1999 were attributable to physical inactivity ⁴.

How Active Should Children and Young People Be?

Current physical activity guidelines recommend that young people should participate in physical activity that is developmentally appropriate, enjoyable, and of at least moderate intensity for one hour per day. Young people who currently do little activity should participate in physical activity of at least moderate intensity for at least half an hour per day. At least twice a week, some of these activities should help to enhance and maintain muscular strength and flexibility, and bone health ⁵.

Levels of Physical Activity among Irish Young People

In today's society, a large proportion of Irish children are not meeting the current recommendations for physical activity. The Health Behaviours of School-Aged Children survey found that participation in regular vigorous physical activity four or

more times per week by Irish children decreased in all age categories from 59% of 10-11 year olds and 53% of 12-14 year olds to 35% of 15-17 year olds in 1998. This survey indicates an approximate 4% reduction in each age category from 1998 to 2002 ⁶.

The Take Part study, initiated by the School of Health and Human Performance at Dublin City University examined the physical activity levels of 1508 students between the ages of 15 and 17 in North Dublin City and County. Fifty six percent of students did not meet the current recommendations for physical activity and were classified as not regularly active ⁷. In a similar study in the east coast area of Dublin and North Wicklow in 2004, 65% of the same age group did not meet recommendations ⁸. In both studies, fewer females met physical activity recommendations than males (North: 38% vs. 48% and South: 30% vs. 42%).

Data from the Central Statistics Office indicate a clear decline in the percentage of young people who walk or cycle to school (actively commute) in Ireland over the last two decades. The proportion of 5 – 12 year olds who walk to school decreased from 47% in 1981, to 39% in 1991 to only 26% by 2002. Among post primary school youth (aged 13 – 18 years) the proportion who walk to school has decreased from 30% in 1981 to 29% in 1991 to 26% in 2002. Cycling trends were stable between 1981 and 1991 in both age groups, however in the decade from 1991 to 2002, cycling rates decreased from 4% to 1% among primary school children and from 13% to 3% among post primary school children ⁹. Recent research indicates that the rates of active commuting among 15 – 17 year old adolescents are higher in North Dublin (64%) than in South Dublin (39%) signifying that area of residence may be an influential determinant in travel choices ^{7;8}. Distance has been cited as the number one reason for not walking or cycling to school by both primary and post primary students ¹⁰ however, as rates of active commuting to school have decreased the distance travelled to school has remained the same ⁹.

Low levels of physical activity among young people is of particular concern given the current health status of Irish children and young people – one in every five children aged 5-12 years and 22% of 15-17 year olds are overweight or obese ¹¹. The immediate and short-term problems that overweight and obese children may experience include type 2 diabetes, respiratory, cardiovascular and orthopaedic

problems, social isolation and psychological effects. The prevalence of type-2 diabetes among children and adolescents has increased in recent years and this appears to be associated with the increasing levels of overweight and obesity in children ¹². The most important long-term consequence of childhood obesity is its persistence into adulthood, with its associated health implications ¹². Even in childhood, obesity generates measurable economic costs to the health system. Paediatric obesity-related hospital costs in the U.S. increased threefold between 1979 and 1999, reaching \$127 million per year ¹³.

The NHA supports the recommendations from the Report of the National Task Force on Obesity, which highlights the need to facilitate increased physical activity among all members of the population by providing opportunities and facilities for active living. The physical environment is a major factor in providing opportunities to be physically active and the Ottawa Charter ¹⁴ specifically identifies the need for a supportive environment to ensure positive health behaviour.

Summary of Evidence

The influence of the physical environment on physical activity among youth is described and research supporting this association is presented, including research in the Irish context. Empirical evidence for changing the environment to promote physical activity among youth is outlined.

The Environment as an Influence on Physical Activity in Youth

Background:

The physical environment is defined as “all objective structural factors, external to the individual, that both positively and negatively influence a person’s behaviour”¹⁵.

Depending on the setting, there are three elements of the physical environment that can influence physical activity – transportation systems, land use patterns and urban design characteristics:

- *Transportation systems* include paths, streets, roads, buses, Luas, DART and trains. They connect places to each other and influence how easy or difficult it is to use different types of transport, such as walking and cycling.
- *Land use patterns* refer to the spatial arrangements of structures and physical elements for example the mix of facilities, industries and residential homes in an area. This may influence physical activity through the presence or absence of facilities for physical activity such as parks, fitness centres, or swimming pools. The proximity of destinations such as schools, shops and banks can influence transport related physical activity.
- *Urban design* refers to the design and style of buildings, streets and open spaces. Urban design can facilitate or hinder walking and cycling, and encourage or discourage use of open spaces for physical activity.

These physical environmental features coexist and are rarely isolated. Urban, suburban and rural areas may be characterised by different physical environments and different socio-demographic neighbourhood or community types. A detailed examination of any such differences is beyond the scope of this paper, which examines specific features of the environment and how they relate to physical activity

in key places for youth activity: neighbourhoods/communities, schools, and facilities for physical activity (e.g. playgrounds, parks and sports/recreation facilities).

Communities:

Neighbourhood streets provide an area for play and active travel. The community environment should be functional, safe, aesthetically pleasing and have mixed use destinations.

Function relates to the fundamental structural aspects of the local environment, for example the physical attributes of the path, which can influence whether people drive, take transit, walk or cycle to get where they are going¹⁶⁻²².

- Well-connected and permeable communities are associated with more travel by foot, and less by car²³ and intersection density is positively related to the number of minutes of moderate intensity physical activity per day among adults²⁴. Among children, cul-de sacs are associated with increased levels of on-street play³⁸. Among adolescent girls, intersection density is negatively associated with moderate to vigorous physical activity⁵³. These findings suggest that planners may need to redefine their vision of streets to include a place where children and adolescents perform physical activity. A design compromise could be achieved if walkways were employed between cul-de-sacs so that both on street play and neighbourhood walking are achievable.
- Perceived access to paths/walking trails²⁵⁻²⁹ and bike lanes/tracks²⁸⁻³⁰ are positively associated with transportation activity among adults and adolescents, and recreational physical activity among adolescents^{31;32}.
- Better pedestrian infrastructure, including paths and street lighting, is related to greater non-automobile travel, particularly for non-work related trips³³. Among youth, objective measures of the availability of paths^{29;34} and cycling tracks²⁹ are associated with increased walking and cycling to school. A steep road en route is a barrier to children's walking and cycling to school³⁵.
- Irish adolescents who walk or cycle to school have better perceptions of function than those who take motorised transport⁷.

Safety comprises both personal safety (i.e. safety from crime) and traffic safety (i.e. the presence of pedestrian crossings).

- Personal Safety: Actual or perceived crime may be a barrier to physical activity. One in seven young Irish people do not feel safe going to and from activities in the evening. This is more common in females and urban dwellers ³⁶.
- Irish data reveals that male adolescents have better perceptions of safety from crime than female adolescents ⁷. Among adolescent girls, better perceptions of crime safety was associated with active commuting to school and achieving physical activity recommendations ⁷.
- Evidence of parental concerns about strangers and abduction or molestation is inconclusive in relation to walking and cycling behaviours among children. Some support has been found for a negative association between parental concerns and walking/cycling ^{37; 38} however other research as found no support for this relationship ^{35; 39}.
- Perceptions of lighting and visibility were not associated with walking/cycling to school or physical activity among teenage girls ³¹. Perceptions of crime were negatively associated with active commuting to school ³¹. No association was found between perceptions of crime and other forms of physical activity ^{28; 31}.
- In low-income neighbourhoods, frequency of vigorous physical activity was associated with perceptions of the presence safe adults at facilities and safe areas for facilities ⁴⁰.
- Perceptions of safety were more important predictors of vigorous physical activity than perceptions of neighbourhood hazards (including crime, litter, drug issues, etc.) ⁴⁰.
- Adolescent girls were less active outdoors if they lived in high crime areas or perceived that their neighbourhood was unsafe for physical activity ⁴¹. Adolescent boys were less active if they lived in areas with high levels of motor vehicle crime, but more active in areas with high levels of murder ⁴².
- Safety from Traffic: Pedestrian fatalities account for 20%, and cyclists represent 2.5% of all fatalities on Irish roads ⁴³. Increased exposure to traffic, especially at high volume and speed, is a known risk factor for child pedestrian injury ⁴⁴. More compact and less sprawling urban designs have lower pedestrian and all-mode fatality rates ⁴⁵.

- Parental concerns about excessive traffic volume and speed are commonly reported barriers that limit the independent mobility of youth^{46; 47} and influence where children play³⁸. Irish parents cited concerns about safety as a major reason why they drove their primary aged children to school, rather than allowing them to walk or cycle¹⁰. Children whose parents believe there are no safe routes to school⁴⁸ and who worry about traffic danger³⁷ are less likely to walk or cycle to school.
- Youth who reported busy traffic on the roads near their home were less likely to view their area as a safe place to walk alone after dark or a safe place for children to play outside. They also reported that their neighbourhood did not have good parks, playgrounds and play spaces⁴⁹.
- Children whose school route is along a busy road or crosses a busy road are less likely to walk or cycle³⁵. In addition parents who perceive unsafe roads, limited lighting/crossings or the need to cross several roads are less likely to allow their children to walk or cycle to school³⁵ or local destinations³⁹. Young people's perceptions of heavy traffic has been unrelated^{31; 35} and negatively associated with active travel⁵⁰. Girls who believe that neighbourhood roads are safe are more likely to walk or cycle to school and for exercise⁵⁰.
- Adolescent girls whose parents perceive that heavy traffic makes walking unpleasant, are less likely to walk for exercise and cycle for recreation⁵⁰ but as likely to achieve physical activity norms³¹.
- Irish adolescents who walk or cycle to school have better perceptions of safety from traffic than those who take motorised transport⁷. Adolescents who are regularly active also have better perceptions of safety from traffic. Males perceive their environment as safer than females⁷.

Aesthetics reflects access to an interesting and pleasing physical environment and includes presence, size and condition of trees and the level of pollution.

- Among adults, low perceptions of neighbourhood aesthetics and scenery is associated with not walking and being sedentary^{25; 51}.
- A composite aesthetics score was positively associated with active commuting to school among 5-18 year olds²⁸. Another study, conducted with adolescent girls uncovered some behaviour specific differences. The presence of trees, interesting features to look at and litter were not associated with active travel

to school, but were positively associated with physical activity. The presence of exhaust fumes and other bad smells were negatively related to walking and cycling, but unrelated to physical activity levels³¹.

- Irish research indicates that males who chose to walk or cycle to school were significantly more likely than inactive commuters to evaluate their local neighbourhood as aesthetically pleasing, this was not true for females⁷.

Destinations refers to the presence of community and commercial facilities that people can walk or cycle to (such as post boxes or shops or public transport stops) as well as the presence of facilities for physical activity (such as parks or fitness centres).

- Among adults, walking for utilitarian purposes is consistently found to be more prevalent in dense, mixed-use neighbourhoods with lots of destinations when compared to lower density, exclusively residential neighbourhoods¹⁷. Young people who live in dense, walkable neighbourhoods are more likely to walk or cycle to school²⁸. Objective measures of land use do not predict active commuting, however perceptions of access to land uses such as having stores within a 20 min walk are positively associated with walking and cycling to school²⁸.
- The presence or absence of neighbourhood shops is a better predictor of adult's active mode choice⁵² and adolescents moderate to vigorous physical activity⁵³ than residential densities. Girls who perceive many places they like to go to within easy walking distance of their homes are more likely to be physically active³¹.
- Limited public transport is not associated with walking or cycling to school among children³⁵, but is associated with walking and cycling in the local neighbourhood³⁹. Adolescent girls who believe it is easy to walk to public transport in their area are more likely to actively commute to school and be physically active³¹.

Schools:

The design of the school environment may hinder or discourage physical activity.

- Location: The location of schools in or near residential areas is paramount to active commuting behaviours. Distance has been consistently negatively associated with travel to school among young people; as distance from school

increases, less children and adolescents walk or cycle to school ^{29; 34; 35; 48}.

Children ^{54 - 56} and adolescents ⁵⁷ who actively commute to school attain more minutes of daily physical activity than those who use motorized transport.

Only 30% of Irish adolescents have reported that they actively commute to school ⁹.

- Transport: Schools can facilitate active travel through educational campaigns and through policies that prioritise pedestrians and cyclists on school grounds, for example strict speed limits, segregated walkways and provision of designated, secure, covered areas for bicycle storage.
- Design: The school environment may influence physical activity through provision of supportive environments and places to be active including playgrounds/yards, sports fields/courts, sports halls/gymnasiums and swimming pools. Such places can be used during Physical Education classes, break time and lunch, and after school in extra-curricular activities.

Facilities for physical activity:

Good land use mix includes the presence of facilities for physical activity (such as parks or fitness centres). Facilities for physical activity should be convenient, accessible and low cost. *Convenience* relates to the presence of facilities for physical activity on a frequently travelled route or within a 5-minute drive or a 10-15 minute walk from home ⁷.

- Minority youth living in low-income neighbourhoods have reported few convenient facilities are available to them ⁵⁸. Rural Irish youth cite a lack of facilities for activities as the most common reason for not joining an activity that they would like to join ³⁶.
- Among Irish youth differences in perceived access to facilities among adolescents was linked to gender differences in preferred leisure time physical activity. Boys were more likely to indicate the presence of soccer or GAA pitches, all-weather pitches and golf courses in their locality. Girls were more likely to indicate the availability of gyms, swimming pools, aerobic dance studios and community centres within their locality. Facilities for activities chosen by girls such as dancing and aerobic exercise were rated within the least affordable options ⁷.

- Proximity to play spaces, parks and recreation centres is associated with physical activity among adolescent boys^{41; 42}. The number, use and liking of facilities for physical activity at home and in the neighbourhood is associated with physical activity among adolescent girls^{31; 53; 59}.
- Availability and location of facilities were not related to physical activity in low-income⁴⁰ and female adolescents⁵⁹, however the quality of facilities was related to physical activity⁴⁰. This suggests that the presence of facilities for physical activity is not singularly sufficient to influence physical activity.
- Having many³¹ and good quality⁵⁰ facilities for physical activity near home is also associated with increased likelihood of active commuting to school among young people.

Evidence for Changing the Environment to Promote Physical Activity in Youth

Research indicates that changing the environment can have positive benefits on physical activity in youth, providing some evidence for environmental interventions. Proposed changes to benefit youth have focused on three key areas; active travel, activity friendly schools and road safety.

Active Travel

The daily trip to school is an opportunity for regular, sustained physical activity through walking or cycling. Active commuting some or all of the way to school has been targeted as an area for health behaviour change amongst children and youth by the US Department of Health and Human Services in its 'Healthy People 2010' document (2001). While this paper is focused on walking or cycling to school, research among adults has indicated that walking to and from public transportation can also help physically inactive populations attain recommended levels of physical activity⁶⁰. Research indicates that active commuting is related to the environment, and that environmental changes can increase active commuting to school.

International research reveals that:

- More children walked in neighbourhoods with more paths⁶¹.

- The U.S “Safe Routes to School (SR2S)” program includes safety improvements to paths, crossings and traffic controls. Implementation of these improvements, along with community-wide encouragement, increased the number of children walking to school by 64%, and the number cycling by 114% over 2 years ⁶².
- All children received encouragement to actively commute, but not all children’s routes passed SR2S improved sites. Children whose route did not pass a SR2S improved site increased walking by 4%, however children whose route passed an improved site increased walking by 15%. Therefore, a combination of environmental changes and encouragement produced the largest effect ⁶³.

Irish research reveals that:

Implementation of the “Safe Routes to School” program resulted in increased walking and cycling in Irish youth:

- Introduction of a walking bus, pedestrian infrastructure and bicycle parking in Donabate resulted in an 11% increase in walking, 8% increase in bus use and a 1% increase in cycling among primary school children. Half of the increase in walking was attributed to the walking bus ¹⁰.
- Introduction of a signal controlled junction, new cycle lanes and footpaths, and parking management in Bray increased cycling from 0 to 9% among primary school children in the first year. Three years later cycling had decreased to 6% ¹⁰.
- Introduction of cycle paths and pedestrian crossings in Malahide produced a 2% increase in cycling and a 1% increase in walking among post primary school students. These changes were attributed to the efforts of a key teacher in the school. This demonstrates how passionate individuals can be a catalyst for change, and how actual environmental improvements may be singularly insufficient ¹⁰.
- A combination of environmental changes and educational campaigns was most effective. Community involvement was essential to success ¹⁰.

Factors that influence choice of active versus inactive transport among adults are based primarily on two basic aspects – distance and directness of travel ¹⁷. This research shows that other factors may also be influential among children. Further

research is required to establish the determinants of active commuting and whether changes to the physical environment are also influential amongst adolescents.

Activity Friendly Schools

The environment at school can influence physical activity. The school environment includes the presence of effective PE; opportunities to be active during break, lunch and extra-curricular activities, and the provision of equipment for activities.

International research reveals that:

- Enhancing PE by increasing the length of classes or increasing activity done during classes results in increased physical activity and improved fitness ⁷¹.
- Introducing playground markings in primary schools in the UK added 18 minutes of active moderate to vigorous intensity play per day among 5 – 7 year olds, and increased energy expenditure by 35% ⁶⁴.
- Provision of equipment (for example balls) to 10-11 year olds increased active break time play by 24% ⁶⁴.
- Inexpensive non-curricular approaches can increase activity in children during school breaks. Provision of more facilities, equipment and supervision are effective strategies ⁴⁷.

Irish research reveals that:

The ‘Playground Markings and other Playground Games’ program is successful in encouraging primary school children to be active during school break time, and has been rolled out on a national basis after a successful evaluation of a pilot project by the North Eastern Health Services Executive (<http://www.nehb.ie>).

Road Safety

Most research has assessed the influence of design improvements on safety from traffic, showing associations with decreased injury and fatality rates. Some research has shown post intervention increases in physical activity. More research is required into the effect of improved safety on physical activity.

International research reveals that:

- Modification of the built environment can substantially reduce the risk of pedestrian-vehicle crashes. Highly effective countermeasures include single-lane roundabouts, paths, exclusive pedestrian signal phasing, pedestrian refuge islands and increased intensity of road lighting⁶⁵. Speed cameras are also an effective intervention in reducing traffic collisions and related casualties⁶⁶.
- Introduction of traffic-calming measures (e.g. speed bumps) increases the use of streets by pedestrians^{22; 67}, and improves child pedestrian safety⁴⁴. Children who live within one block of a speed bump are half as likely to be injured by a car in their neighbourhood, than those who don't⁴⁴.
- Children (aged 6 to 14) who have roads with 30kph speed limit, pedestrian crossings with traffic lights and playgrounds within 500m of home are less likely to be injured as a pedestrian or cyclist⁶⁸.
- Implementation of safety improvements as part of pedestrian and bicycle oriented policy between 1975 and 2001 decreased pedestrian and cyclist fatalities in Germany (82% and 64%) and in the Netherlands by (73% and 57%) matched with a doubling in the number of bike trips and a 50% growth in the share of bike trips. Implemented pedestrian friendly transportation infrastructure has included: extensive auto-free zones; wide, well-lit paths on both sides of the street; pedestrian refuge islands for crossing wide streets; zebra crossings and pedestrian activated crossing signals. Implemented bicycle friendly infrastructure has included truly coordinated urban and rural networks; special bike turn lanes leading directly to intersections and separate bike traffic signals with advance green light for cyclists. Improvements also included traffic calming of residential neighbourhoods, restrictions on use of motor vehicles, traffic education and strict enforcement of traffic regulations²².
- Five out of seven evaluations of Home Zone Schemes suggested a positive impact on play opportunities and independent mobility of children and young people. Over 50% of local authority officers who lead Home Zone Schemes felt that the scheme increased children's outdoor activity including walking, cycling and playing in the street⁶⁹.
- An injury prevention program that included school and community based traffic education, bicycle safety clinics, helmet distribution and construction of new playgrounds as well as improvements to existing playgrounds and parks

to provide expanded off-street play areas for children, reduced pedestrian injuries among school-aged children by 45%⁷⁰.

Conclusion and Comment:

International and Irish research has shown correlations between environmental factors and physical activity levels. Several international studies have demonstrated that changing the environment can change physical activity behaviour among youth. The limited research data available suggests that environmental change is a promising strategy in fighting youth inactivity and obesity. Environmental changes are potentially less costly and more enduring than traditional educational physical activity interventions. They also have the potential to reach a greater population and therefore have potentially greater public health impact. Active travel such as walking or cycling, are suitable modes of physical activity for the general public, particularly sedentary individuals. For adolescents in particular, walking or cycling can dramatically decrease the sedentary time of travelling to school each day by car, bus or train. If undertaken at sufficient intensity active travel can provide health benefits and contribute towards achieving daily physical activity requirements. However, research has shown that the way we build our communities either encourages or inhibits our active travel and consequently our overall physical activity. The promotion of walking and cycling as modes of active travel is singularly insufficient to bring about change in behaviour. Intervention is required through environmental, policy and legislative changes. The subgroup encourages the development of policy recommendations by the National Heart Alliance, in collaboration with key stakeholders in this area.

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