The Australian Prevention Partnership Centre
Systems and solutions for better health

Getting Australia Active III

A systems approach to physical activity for policy makers

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Getting Australia Active III: A systems approach to physical activity for policy makers

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Disclaimer: This evidence review is not necessarily a comprehensive review of all literature relating to the topic area. It was current at the time of production (but not necessarily at the time of publication) and is based on sources believed to be reliable.

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Foreword

The World Health Organization (WHO) advises member states to use the guiding principles in the Global Action Plan on Physical Activity (GAPPA) to inform their selection of policy actions in efforts to reduce rising levels of physical inactivity.

Employing a rights-based approach, countries are urged to ensure resourcing according to the principle of proportional universality, by directing greatest efforts to increasing levels of physical activity in the least active populations.

In combination, the strategic objectives and policy actions outlined and recommended in GAPPA capture the whole-of-systems approach required to create a society that intrinsically values and prioritises policy investments in physical activity as a regular part of everyday life.

Effective national action to reverse current trends and reduce disparities in physical activity requires a whole-of-systems approach – there is no *single* solution. Cross-government and multisectoral partnerships, as well as meaningful community engagement, are needed to achieve a coordinated, whole-of-systems response which can deliver multiple benefits for health, the environment and the economy.

How timely it is then, that *Getting Australia Active III*, a resource designed specifically to help policy makers to adopt or further strengthen a whole-of-systems approach to physical activity in Australia, has now been made available. The release of this new guide is also welcomed because it comes at a time when Australia is in the consultation phase on a new 10-year National Preventive Health Strategy and in the preparatory phase for a National Physical Activity Strategy.

Getting Australia Active III will be of interest to policy makers in the health sector certainly; more importantly this guide is designed for *all* policy makers and others who have an important role to play. This includes, but is not limited to the sectors of transport, urban planning, education, tourism and recreation, sports and fitness, local government as well as in grassroots community groups and civil society organisations.

In 2018, all countries agreed it was time for more action and set the global target of a 15% relative reduction in the global prevalence of physical inactivity in adults and in adolescents by 2030. As a member state of the WHO, Australia committed to addressing physical inactivity in line with the Global Action Plan and is well placed to do so.

There is a strong commitment towards improving health and wellbeing, a robust research community providing the evidence to inform action; and wide networks across and within each state ready to contribute to a whole-of-systems approach to increasing levels of physical activity in Australia. With the publication of *Getting Australia Active III* there is now guidance which can inform and guide Australia to realise the vision, shared with the global community of member states – *more active people for a healthier world*.

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How to use

This guide, *Getting Australia Active III (GAAIII),* aims to build greater understanding and capacity among government policy makers to employ a whole-of-systems approach (WSA) to increase physical activity (PA) in Australia. A WSA involving coordinated, multisectoral action is essential to address the numerous interacting influences on PA and is endorsed as a critical approach by the World Health Organization (WHO) in its Global Action Plan on Physical Activity 2018 – 2030 (WHO GAPPA).

- **GAAIII is based on a *systems approach***
- **It is written mainly for government policy makers in Australian states and territories**
- **It includes latest evidence on 'what works' and recommendations on policy action and investment**

This guide provides action-oriented guidance for policy makers to support the implementation of a WSA to PA in Australia. It has been developed by the Australian Systems Approaches to Physical Activity (ASAPa) project. The ASAPa is a national initiative funded by the Australian Government's Medical Research Future Fund to map policies, programs and prevalence metrics at state, territory and federal level; thereafter we hope this work will inform a systems-focused policy framework for PA in Australia. Refer to Appendix 6 for further information about ASAPa and its outputs.

The guide begins by summarising the evidence on the multiple cross-sectoral benefits derived from an active society (Chapter 1.1) and current rates, trends and social disparities in PA participation (Chapter 1.2). It follows with a broad overview of WSAs and how they can be applied by policy makers to better understand the range of opportunities and partners that can be engaged to generate the policy impact needed to shift the PA system towards a more positive state (Chapter 2.1). A conceptual systems map for PA aims to provide a high level framework of key areas that need to be addressed by policy makers for a comprehensive and robust policy approach to PA (Chapter 2.2).

The guide follows with practical guidance on how to support and use WSAs in practice (Chapter 2.4) and importantly, how to promote better governance and knowledge mobilisation to strengthen the durability, integration and impact of cross-sectoral action (Chapter 2.3). It offers specific recommendations for action and investment in each of the domains where policy can intervene to promote more active people, societies and environments (Part 3), with specific consideration of the additional actions and investments needed to address inequity across these domains (Chapter 4). It concludes with recommendations on achieving greater coordination and consistency in surveillance of PA behaviours and monitoring of a broader set of indicators to evaluate PA-related progress across different sectors (Chapter 5).

Each section contains clear implications for policy and an overview of how that area interacts with other parts of the PA system. We urge policy makers to reflect on the recommendations and implications and consider what they mean for their jurisdiction and sector, identify gaps and opportunities for strengthening policy action, and potential partners they can engage with to enhance collaborative action. Policy makers are encouraged to consult the links within each chapter, to gain a more comprehensive understanding of how the recommendations for that chapter fit within the broader context of a multistrategic, multisectoral approach to PA and priority actions that can be pursued in partnership with other sectors.

GAAIII updates the evidence published in previous editions of Getting Australia Active in 2002 and 2004 and incorporates additional guidance to support policy makers with implementing the actions recommended by WHO GAPPA. It is consistent with and complementary to the National Heart Foundation's *Blueprint for an Active Australia (3rd ed) 2019*. There is considerable evidence now to inform what needs to be done. Adequate investment, leadership and commitment by all sectors and levels of government is now necessary if Australia is to meet the global target it has adopted of achieving a 15% reduction in physical inactivity by 2030.

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Chapter summaries

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1. The case for physical activity

1.1 Co-benefits of physical activity – health, social, economic, environmental and other societal gains from building a more active nation

The health benefits of physical activity (PA) are substantial and the evidence is particularly robust for the general adult population and for people with pre-existing medical conditions. There are established benefits for PA in relation to prevention of cardiovascular disease (CVD), type 2 diabetes, colon and breast cancer. Newer evidence supports the role of PA in reducing the risk of cancer of the bladder, endometrium, oesophagus, kidney, lung and stomach; dementia; excessive weight gain; gestational diabetes and postpartum depression; and risk of falls in older people.

In addition, there is increasing evidence that PA is associated with improved quality of life and sleep, reduced feelings of anxiety and depression in healthy people and in people with existing clinical syndromes, and improved cognitive function across the life span. Regular PA improves bone health, body composition and weight status in children and adolescents and improves physical function among older people regardless of frailty.

But important co-benefits of PA also accrue to sectors and settings beyond health. This understanding underpins the cross-sectoral systems approach to PA recommended in the WHO *Global Action Plan on Physical Activity 2018–2030* (GAPPA) (see Appendix 4 for an overview of GAPPA).

It is important to identify the cross-sectoral co-benefits explicitly as a core element of the rationale for cross-sectoral strategies and partnerships to promote PA. The co-benefits discussed include:

- **Economic growth:** sustainable infrastructure, productivity, reduced healthcare costs
- **Strengthening communities:** boosting neighbourhood and social capital, social wellbeing
- **Liveability:** planning for more liveable cities and towns
- **Environmental sustainability/climate change mitigation:** reducing carbon emissions, improving air quality
- **Health:** a wide range of physical and mental health benefits for general and special populations
- **Wellbeing**: strategies to increase population wellbeing are increasing across jurisdictions and PA is a major contributor
- **Safety:** injury reduction, infrastructure for active travel.

1.2 Are Australians active? Prevalence, trends and correlates of meeting physical activity guidelines

This chapter describes the prevalence of PA among Australians. This involves understanding current PA guidelines and using population data to identify the proportion of people that meet those guidelines. If repeat population surveys are carried out in an identical fashion, then trends in PA can be monitored. Understanding the patterns of PA and sedentary behaviours in the population helps us to design the optimal mix of universal strategies to give more Australians the opportunity to benefit from an active lifestyle. In addition, insights from data can enable targeted initiatives in areas of specific need, based on age, gender, ethnicity, disadvantage or other characteristics.

2. Whole-of-systems approaches

2.1 Whole-of-systems approaches to physical activity

There is a growing recognition that complex public health problems, such as physical inactivity, are not amenable to simple, single solutions. This has led to increasing interest in whole-of-systems approaches (WSAs), to identify effective mechanisms for tackling these problems.

GAPPA includes an objective to "*create active systems*". Effective action requires an integrated, system-wide approach in consultation with policy makers and stakeholders from multiple sectors; mapping the system is a useful starting point. Systems maps can be conceptual or used as a basis for more complex quantitative modelling. The process of collaboration to build a map may help to build consensus on the nature of the problem and to foster engagement with potential policy responses required. The policy insights gained by participating stakeholders may be more important than the map itself.

There is no need to start building a PA system map 'from scratch'; the map developed for GAPPA, or the map developed for Australia (Chapter 2.2), can be adapted or further developed to suit a given purpose or context. PA may also feature as part of the solution in systems maps for other complex problems such as to improve environmental sustainability, reduce air pollution, or promote mental health and healthy weight.

2.2 Developing a whole-of-systems map for physical activity in Australia

Whereas the previous Chapter 2.1 provides a general background on WSAs to PA and how they contribute generally to a more active society, this Chapter 2.2 deals more specifically with the Australian context and with the mapping work undertaken by the Australian Systems Approaches to Physical Activity (ASAPa) project. A first map of high level (national) PA systems, based on collaboration and advice from professionals throughout Australia is provided. The map includes influences on PA, advocacy mechanisms, intervention points for policies and programs, as well as governance and knowledge translation mechanisms which are sometimes overlooked by researchers but are emphasised in this guide as being of central importance to the progression of effective and sustainable policy development and implementation.

2.3 Leadership, governance and knowledge mobilisation for whole-of-systems approaches to physical activity

WSAs to enable better PA policy, require certain forms of leadership, governance and knowledge mobilisation. These may be regarded as the 'three pillars' of WSAs. Configuring and deploying these functions well is essential to avoid conceptual and operational pitfalls which otherwise lead to flawed and ultimately ineffective policy development. This chapter describes the style of leadership required for WSAs and criteria for good governance. It also expands on the role of knowledge mobilisation, which refers to the processes of generating, sharing and using knowledge to develop and improve policy and practice and produce useful research. In the context of WSAs, knowledge mobilisation helps to: (i) build a learning culture; (ii) increase transparency and sharing; and (iii) stimulate evidence translation for better policy and practice.

2.4 Strategic principles and capacity building for whole-of-systems approaches to physical activity

This chapter provides guidance on how to invest in capacity building for a WSA to PA. It sets out: (i) design principles; (ii) essential components of transformative systems change; and (iii) competency domains/learning outcomes for WSAs. Policy for WSA capacity building needs to: (a) clarify which of the four levels of capacity building are to be addressed (individual, community, organisation or system); (b) incorporate the five design principles set out in the chapter; (c) ensure that 'whole system change' is adequately addressed in teaching and learning experiences; and (d) refer to the 'taxonomy of competency domains and learning outcomes for whole systems approaches'.

3. Policy domains for action

3.1 The education domain and physical activity

This chapter deals with preschool, primary and secondary school; existing evidence for the tertiary phases of education (including vocational and adult education) is limited. Two underpinning concepts are explained:
(i) Physical Literacy and (ii) The Health Promoting School.

Physical literacy is defined as 'lifelong holistic learning acquired and applied in movement and physical activity contexts', to enable appreciation and participation in diverse forms of PA across the life course. The evidence presented in the rest of the chapter is framed using the three main components of the Health Promoting School model:

- The Curriculum (teaching and learning)
- The school organisation (ethos and environment)
- Partnerships and services.

School-based PA interventions can pursue the twin goals of increasing PA and building fundamental movement skills. These interventions are cost effective compared to other options in terms of PA outcomes, but the standard of children being physically active for at least 50% of allocated time in health and physical education needs to be pursued. Building Physical Literacy (including Fundamental Movement Skills) is also a priority in preschool, primary and secondary education.

3.2 The transport domain and physical activity

Transport involves any journey from one place to another (including the trip to work) but most trips are made for social reasons, to transport a passenger (e.g. a child) or for shopping. To leverage this domain for PA, the WHO recommends investments designed to achieve macro-level urban design, incorporating:

- Connected street networks (that include footpaths and cycling infrastructure)
- Easy access to a diversity of destinations and access to public transport
- The housing (and therefore population) density required to make mixed use planning and public transport services viable.

Other investments in this domain include building and connecting active travel networks; school-based active travel interventions; social and individualised marketing programs and workplace-based travel programs. The policy co-benefits for active transport and PA are increasingly important; the implications of travel behaviour change for climate change mitigation and adaptation have already been identified and will only increase in importance. Interventions to promote active transport need to be implemented in conjunction with interventions that address the built form and land use.

3.3 The built environment domain and physical activity

The built environment includes workplaces, schools, home, shops, and the space between these places. Urban design, land use and infrastructure include these settings, as well as public open space and green areas. In addition to the advice in Chapter 3.2 (the Transport Domain), there are clear design principles for planning integrated regional and local land use and transport environments to encourage a mode shift away from private car use and towards walking, cycling and use of public transport. These land use and mobility considerations need to be addressed together.

The Community Sport Infrastructure Resource Library provides a guide to assist in the planning, design and construction of innovative, sustainable and fit for purpose community sporting infrastructure. A web portal is available with resources to assist with best practice. The Heart Foundation's web-based toolkit provides design specifications, case studies and resources that support efforts to promote PA through the domain of the built environment; available at Healthy Active by Design.

3.4 The primary and secondary healthcare domain and physical activity

Primary and secondary healthcare providers can contribute towards a more physically active society by integrating PA counselling as part of routine care and treatment, complemented with referral and supporting links with community-based programs and services. Brief intervention, through providing PA counselling and referral as part of routine primary healthcare services, is identified by WHO as a 'best buy' for non-communicable disease prevention and a cost-effective strategy for promoting PA. There is a spectrum of approaches that may be used, ranging from very brief interventions to intensive counselling and support from an exercise specialist. PA counselling and advice in healthcare settings currently shows limited implementation in Australia.

Policy makers have a key role to play in providing leadership and financial support for programs that can help elevate the importance of PA in routine practice, upskill the healthcare workforce, and build organisational capacity for delivering PA interventions. An integrated approach is required, to develop a sustainable model for PA promotion in healthcare settings; the development process needs to involve all relevant organisations (government, non-government, primary health networks and professional associations).

3.5 The communication domain and physical activity

Mass media campaigns are designed to be organised, purposive interventions using mass media communications to increase community awareness about certain health-related issues. Their role is to increase whole community understanding, shape the agenda for change and to signpost a range of potential change options or information-seeking steps that could lead to health enhancing behaviours.

What we term 'mass media-based social marketing campaigns' (MM-SMC) means mass media combined with the right policy actions, programs/services/products and supportive environments. There is compelling evidence that MM-SMC represent the best practice which WHO encourages member states to aspire to when designating mass media campaigns as a 'best buy' for the prevention and control of non-communicable diseases. The FLOWPROOF best practice protocol for implementing mass media-based social marketing campaigns is outlined in Section 3.5.4; for low resource contexts the PRAGMMATIC (Practical Guidance on Mass Media Techniques In Countries) protocol is explained in Section 3.5.5.

Given the recency of social media approaches to health behaviour change, there is currently no evidence that social media alone can change behaviour. However, these methods are inexpensive, can be tailored to different audience segments, and are recommended as complements to, not substitutes for, traditional mass media.

3.6 The community domain and physical activity

Community-wide strategies to promote PA in populations recognise that barriers and enabling factors for PA operate at multiple levels, including at intrapersonal, interpersonal, organisational, environmental and policy levels. This perspective provides the foundation for community-wide programs to promote PA, using a mix of coordinated strategies to address the multi-level determinants of activity. Actions can come from any one or more of the seven other domains for policy action identified in this guide. For example, these actions might include mass media campaigns, community participation or educational events, settings-based action in healthcare, schools, workplaces, as well as advocacy and environmental changes.

The chapter highlights the Active Living by Design Community Action Model which incorporates integrated and multilevel, cross-sectoral strategies, with an intentional focus on health equity. Community-level interventions can respond to local community opportunity, capacity and nuance. They may also be able to mobilise local partnerships and resources, for example, faith-based, farm-based, or culturally, geographically or climatically tailored to local need and across local communities. They can also be supported by alignment with strategies and use of resources that have been developed to promote PA at the state or national level.

3.7 The workplace domain and physical activity

For the PA-promoting potential of the workplace domain, success is contingent on the availability of effective and sustainable interventions and programs that can be scaled to achieve population reach; a considerable challenge given the significant proportion of workplaces that are small (44% of all Australian workplaces in 2017–18) and

which experience greater difficulties implementing workplace programs. Nonetheless, the workplace is an important domain because it provides access to much of the adult population: more than 12.2 million Australians in the 15–64-year-old age group were estimated to be employed at the beginning of 2019.

WHO recommends multi-component workplace PA programs as does the US Community Preventive Services Task Force. Leadership and workplace culture that is supportive of health (including PA) also feature prominently in recommendations of major international and national health agencies.

There is some promising evidence for programs incorporating newer approaches such as telephone coaching of high-risk individuals together with the use of financial incentives; more research is required in these new areas. Telephone-based lifestyle coaching services (such as Get Healthy at Work) and clinical chronic disease support services are the fastest growing components of workplace programs in Australia and New Zealand; the challenge to overcome is in ensuring these are taken to scale.

There is also opportunity for intersection between the workplace domain, active transport and the planning domain to promote healthy PA behaviours such as active transport, incidental movement and sitting less.

3.8 The sport and recreation domain and physical activity

Traditionally, sport has had more of a focus on competition and elite performance than on health enhancement through PA. This has begun to change as increasing evidence highlights the potential contribution of sport towards health enhancing PA, and population trends indicate a shift towards less competitive, less structured, shorter formats involving social participation.

There is an urgent need to develop standardised and sustained surveillance of sport, PA and sedentary behaviour in all Australian states and territories and at the national level. Sports systems, policies and programs need to promote a 'sport for all' model – physical literacy and participation across the life course. Five strategic principles are suggested: (i) Human movement life course continuum; (ii) Intersectoral approach; (iii) Life course approach; (iv) Whole-of-society benefit; and (v) Whole-of-system approach. Ten priority policy options are recommended for Australian governments.

4. Addressing inequity to increase participation among socially disadvantaged groups

People who are affected by circumstances that place them at greater disadvantage in terms of access and ability to participate in PA, including poverty, gender, disability, rural background and Aboriginal or Torres Strait Islander, cultural, ethnic or linguistic background (or the intersection of these factors), have been reported to have disproportionately higher levels of physical inactivity in Australia.

The largest health gains are derived from inactive individuals becoming more active. Addressing efforts to encourage and support even small increases in activity in inactive individuals (which disproportionately include socially disadvantaged groups) could therefore benefit population health and consequently lead to broader community and economic gains. Part of this involves allocating resources according to need to differentially improve inequalities in PA, so that those experiencing greater social disadvantage can increase their activity levels to a greater extent than those who are more advantaged and already active. Policy actions should:

- Address equity over the life course, recognising the cumulative effect of past experiences, attitudes and social, cultural and economic factors on PA throughout life, as well as the needs of groups across different stages of their life
- Aim to reduce inequity and increase population level PA as complementary goals, using a combination of upstream (environmental) and downstream (awareness raising and education) approaches
- Incorporate principles of co-design with communities as a foundation for strategy development
- Specify clear and measurable PA-related targets for subgroups and be supported by monitoring systems that can evaluate progress.

5. Physical activity surveillance

This chapter is linked to Chapter 1.2 on the prevalence of PA among Australians, with common themes of measurement and monitoring. However, comprehensive surveillance requires assessment of the broader PA system, not just estimates of PA behaviours. This chapter presents the concept of a PASS, a comprehensive PA surveillance system (PASS) which is a multilevel integrated set of indicators and measurements that assesses individuals, organisations, settings and sectors, and their relationships in the PA system over time. A PASS is a modular structure, with components added as necessary for a particular setting, jurisdiction or purpose. Planning and designing a PASS should be part of developing any national or regional PA strategy, but elements of the PASS will also be relevant to strategies where PA is an embedded component of other prevention-related activities.

Routine survey indicators that need to form the long-term components of PA surveillance are at the core of PASS. A PASS may then also collect routine organisation-level and policy implementation indicators. More acute or short-term implementation measures may be added as needed to reflect immediate indicators of implementation of a particular component of the overall PA strategy.

This chapter recommends key design principles for the development of a PASS: generalisability, simplicity, data quality, comprehensiveness, between-jurisdictional comparability, continuity and sustainability, adaptability and affordability. It also suggests examples about the types of measures that could be embedded in a PASS. Expert decisions need to be made about the measures used; once those decisions have been made, there needs to be long-term commitment to those measures.

1. The case for physical activity

1.1 Co-benefits of physical activity promotion – health, social, economic, environmental and other societal gains from building a more active nation

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1.1.1 How does a 'co-benefits' paradigm contribute to a more active society?

The late Professor Jerry Morris once observed that physical activity (PA) could be a '*best buy in public health*'. The year was 1994 and the context was a paper on the prevention of coronary heart disease (CHD) for the west.[1] Globally, physical inactivity is now conservatively estimated to cost INT$54 billion[a] in direct healthcare (2013) of which 57% is incurred by the public sector and an additional INT$14 billion is attributable to lost productivity. Estimates from both high-income, as well as low and middle-income countries (LMICs) indicate that between 1–3% of national health care expenditures are attributable to physical inactivity.[2]

Research describing policy co-benefits from creating a more active society has emerged, especially during the past decade.[3-20] Mayrhofer has discussed the science and politics of policy co-benefits, specifically with respect to climate policy, but identifying important concepts and generic lessons for policy makers focused on health, PA, sport and active recreation.[13] Authors using the term 'co-benefits' have applied it to a wide range of climate-related, economic, environmental, social and political goals. The similar concept of 'syndemics' (cross-portfolio but related epidemics such as obesity, climate change and undernutrition all occurring simultaneously) has also been reported in relation to global and planetary health.[21] Another cluster that has been described as a syndemic is poverty, depression and diabetes.[22]

To date, it is mostly economists that have engaged with the concept of co-benefits, and there is relatively little multi- or trans-disciplinary work undertaken that also looks at the political and institutional aspects of co-benefits, which may slow down progress (through slower incremental approaches to complex problems) and fail to produce the structural changes needed for systems approaches to be optimally realised.[13]

- **An understanding of the 'co-benefits' of a more active society underpins the cross-sectoral systems approach to physical activity recommended in the WHO Global Action Plan on Physical Activity 2018–2030**
- **It is important to identify the cross-sectoral co-benefits explicitly as part of the rationale for cross-sectoral strategies and partnerships to promote PA.**

[a] International dollars – see Glossary.

Co-benefits of PA may be defined as the benefits expected to accrue over and above the health benefits of increased PA, thus producing additional health benefits and added benefits for sectors and settings beyond health alone. This understanding underpins the cross-sectoral systems approach to PA recommended in the WHO *Global Action Plan on Physical Activity 2018–2030* (GAPPA) (see Appendix 4 for an overview of GAPPA).[2] It is important to identify the cross-sectoral co-benefits explicitly as a core element of the rationale for cross-sectoral strategies and partnerships to promote PA. This chapter synthesises the evidence for a range of health and co-benefits of PA that can help to build this rationale.

1.1.2 What is the supporting evidence?

In Chapter 1.1, we discuss the well-known and established benefits of PA, and also highlight the social, economic, environmental and other policy co-benefits of efforts to create a more active Australian population. Evidence is discussed specifically in each of the subsequent sections; here we provide some introductory comments on the overall body of evidence for co-benefits of PA.

Of all the benefits examined, the evidence for health benefits is the most robust for the general adult population (Table 1) and for people with pre-existing medical conditions (Table 2). More definitive evidence is needed for health benefits in the early years of life (0–3 years of age).

There is a substantial body of evidence to showcase the co-benefits of an active society – that designing and creating parks, communities, transportation systems, schools, and buildings that make PA attractive and convenient is also likely to produce a wide range of benefits that contribute towards environmental sustainability, economic prosperity, and multiple dimensions of health.[16] Wide-ranging and international studies show a positive association between PA, sport and social capital; further research can help to refine our understanding of this association and how best to leverage it through policies and programs.

Conversely, there is compelling evidence that an inactive population is very costly in terms of indirect economic loss and lost productivity as well as direct healthcare costs. Notwithstanding methodological heterogeneity and challenges in economic analyses, even modest success in our efforts to create a more active society will prove highly cost effective; the Intergenerational Review of Australian Sport[23] identified at least A$7 returned for every A$1 expended in the sector.[b] Estimates of the annual value to society of sport, PA and active recreation range from A$12.8 billion (ABS 2011–12)[24] to A$16.2 billion (KPMG 2018)[25] to A$83 billion (Intergenerational report, Boston Consulting Group 2017)[23], depending on the comprehensiveness of inclusions, with the Intergenerational report having the most comprehensive coverage.

1.1.3 What are the health benefits of a more active society?

Health benefits – general population

The 2018 US Physical Activity Guidelines Advisory Committee Scientific Report provides a comprehensive update of the evidence for PA-related health benefits. Table 1, derived from that Report,[26] shows the health benefits for the *general population*. This review identified new primary prevention evidence since 2008 including new epidemiological studies; in addition to known areas of prevention (especially CVD, type 2 diabetes, colon and breast cancer prevention) new evidence (shown in *italics* in Table 1) supports the role of PA in reducing the risk of:

- Cancers of the bladder, endometrium, oesophagus, kidney, lung, and stomach
- Dementia
- Excessive weight gain in children, adults, and pregnant women

[b]Combination of direct economic benefits, value of volunteers and not-for-profits, avoided health costs and education benefits.

- Gestational diabetes and postpartum depression
- Risk of fall-related injuries in older people.

In addition, there is increasing evidence that PA is associated with improved quality of life and sleep, reduced feelings of anxiety and depression in healthy people and those with existing clinical syndromes, and improved cognitive function across the life span. Regular PA improves bone health, body composition and weight status in children and adolescents and improves physical function among older people regardless of frailty.

There is no threshold that must be exceeded before benefits begin to accrue; in fact, the greatest benefits are for the least active individuals.[27] Low PA is directly associated with elevated risk of all-cause and cardiovascular mortality, incident CVD and type 2 diabetes, and selected cancer sites.[26]

Health benefits – people with existing medical conditions

People living with chronic disease also benefit from being physically active. For example, PA can lessen the severity of their condition, prevent disease progression and premature death, help manage or reduce symptoms and improve mobility. Table 2 shows the most recent evidence synthesis regarding these secondary and tertiary prevention benefits. The position of PA/exercise in cardiac rehabilitation is now firmly established through numerous clinical trials and meta-analyses.[28,29]

PA is also recognised as an important intervention for those with pre-diabetes and established diabetes[30], and as an adjunctive therapy for those with cancer. Important Australian position statements about PA for the majority of people with cancer were released by the Clinical Oncology Society of Australia[31] and from Exercise and Sports Science Australia.[32]

In addition, Matthews and colleagues have published important findings on the amount and intensity of PA associated with lower cancer risk.[33] Targeted exercise prescription, which includes the provision of behaviour change advice and support, is needed to ensure the greatest benefit (as defined by the patient) in the short and longer term, with low risk of harm.[32]

Table 1. Physical activity health benefits – general population (primary prevention)[a]

Age	Condition	Benefits
3 to <6 years[b]		*Improved bone health and weight status*
6–17 years		• Improved: - *cognitive function* - cardiorespiratory and muscular fitness - bone health - cardiovascular risk factor status - weight gain or adiposity • Fewer symptoms of depression
Adults, all ages	All cause-mortality	Lower risk
	Cardiometabolic conditions	• Lower risk of: - cardiovascular disease and cardiovascular disease mortality (including heart disease and stroke) - hypertension - type 2 diabetes

Age	Condition	Benefits
		• Metabolic benefits for overweight people who are active even if they do not lose weight
	Cancer	• Lower risk of the following cancers: - *bladder* - breast - colon - *endometrium* - *oesophagus* - *kidney* - *stomach* - *lung*
	Brain health	• Reduced: - *risk of dementia* - *risk of depression* - feelings of anxiety and depression in healthy people and those with existing clinical conditions • Improved - *cognitive function following acute bouts of aerobic activity* - *quality of life* - *sleep*
	Weight	• *Reduced risk of excessive weight gain* • An additive effect on weight loss when combined with moderate dietary restriction • Weight loss and the prevention of weight regain when a sufficient dose of moderate-to-vigorous PA is attained
Older adults	Falls	• Reduced risk of: - falls - *fall-related injuries*
	Physical function	*Improved physical function in older adults with and without frailty*
	During pregnancy	• *Reduced risk of:* - *excessive weight gain* - *gestational diabetes* • *No risk to fetus from moderate intensity PA*
	Postpartum	*Reduced risk of postpartum depression*

[a] Only outcomes with strong or moderate evidence of effect are included in this table. Benefits in *italics* are those added in 2018; benefits in normal font are those noted in 2008.

[b] Insufficient information available for children <3 years.

Source: Powell et al.[26]

Table 2. Physical activity health benefits – people with existing medical conditions[a]

Condition	Mortality and disease progression outcomes	Mortality, development of new chronic condition, quality of life, physical function and disease progression	Physical function	Cognition	Benefit
Breast cancer	✓				*Reduced risk of all-cause and breast cancer mortality*
Colorectal cancer	✓				*Reduced risk of all-cause and colorectal cancer mortality*
Prostate cancer	✓				*Reduced risk of prostate cancer mortality*
Osteoarthritis		✓			• *Decreased pain* • *Improved function and quality of life*
Hypertension		✓			• *Reduced risk of:* - *progression of cardiovascular disease* - *increased blood pressure over time*
Type 2 diabetes		✓			• *Reduced risk of:* - *cardiovascular mortality* - *progression of disease indicators: HbA1c, blood pressure, blood lipids and body mass index*
Recent hip fracture			✓		*Improved walking, balance and activities of daily living*
Frailty			✓		*Improved walking, balance and activities of daily living*
Stroke			✓	✓	• Improved walking, physical fitness and function independence • *Improved cognition*
Spinal cord injury	✓				• Improved physical fitness • *Improved walking and wheelchair skills*
Dementia				✓	*Improved cognition*
Multiple sclerosis		✓		✓	• Improved walking • *Improved strength and physical fitness*

Condition	Mortality and disease progression outcomes	Mortality, development of new chronic condition, quality of life, physical function and disease progression	Physical function	Cognition	Benefit
Parkinson's disease			✓	✓	*Improved walking, balance, activities of daily living and cognition*
Schizophrenia				✓	*Improved quality of life and cognition*
Attention deficit hyperactivity disorder				✓	*Improved cognition*

[a] Only outcomes with strong or moderate evidence of effect are included in this table. Benefits in *italics* are those added in 2018; benefits in normal font are those noted in 2008. Ticks have been placed against the relevant type of outcome/s that describe the benefit in the right-hand column.

Source: Powel et al.[26]

1.1.4 What are the social benefits of a more active society?

Active engagement may increase social wellbeing and social capital

The OECD definition of social capital is *"networks together with shared norms, values and understandings that facilitate co-operation within or among groups"*.[a] Social capital includes citizenship, neighbourliness, social networks, and civic participation. Longitudinal associations between PA and social capital have been reported in studies conducted in Japan[34,35], Belgium[36], Canada[37], China[38] and Sweden[39], and in a multilevel analysis conducted in the Netherlands.[40]

Research undertaken on a large dataset from the UK's Taking Part survey investigated the inter-relationships between sport, general health, social capital and subjective wellbeing (SWB).[41] The research found a relationship between sport and SWB, mediated through general health, which suggests a potential 'multiplier' effect on SWB and general health. To target non-participants of sport, the researchers suggest that PA should be promoted for enjoyment, with health benefits subsequently following.[41] Overall, the evidence points to a consistent association between PA and wellbeing and social capital outcomes, although the underlying studies are observational in nature and thus unable to establish the causal relationship we suspect may exist.

Positive effects on academic performance

Evidence from systematic reviews and meta-analyses are generally supportive of the association between physical education or school-based PA and academic performance in children.[42-51] This position is supported by recent longitudinal data.[52-55] Research and pedagogical questions remain regarding how to best incorporate PA within schools to improve academic achievement.[45,48,56,57]

[a] OECD Glossary.

Crime reduction

There is interest in the relationship between PA and crime reduction, although most of the commentary in this area comes from the sport sector. The Australian Sports Commission's Clearinghouse holds that:[58]

- With the right policy settings, participation in sport can assist to reduce crime in society
- Sport can be effective when combined with programs that seek to address wider personal and social development especially of young offenders
- There are several Government programs at all levels that use sport as a tool for crime minimisation and reintegration for young people in Australia.

While there are strong theoretical arguments, evidence for the effectiveness of large-scale diversionary projects remains elusive. The evidence we do have comes mostly from programs targeted at at-risk young people/rehabilitation programs, rather than from effects in a general population.[59]

Potential for equitable benefits for mental and physical health through outdoor sports

Outdoor sports occur in natural or open-air environments such as hiking, swimming in the natural environment, cycling, skiing, canoeing, surfing, and climbing. Outdoor sports offer the potential for more equitable societal distribution of benefits because many are free or low-cost and broadly accessible to the general population.

A systematic review of the benefits of outdoor sports for society was conducted by researchers in seven European countries.[60] The study suggests that outdoor sports are associated with a range of positive health benefits including better cardiovascular function, improvements in blood pressure, obesity, resting heart rate, and a positive influence on other health markers.[60]

In terms of mental health, activities undertaken in green and blue environments have especially positive effects beyond the benefits of being physically active in a non-natural environment. 'Blue space' or 'blue environments', as defined in the systematic review by Britton and colleagues[61], refers to all visible, outdoor, natural surface waters that have the potential to promote human health and wellbeing. This excludes outdoor swimming pools, garden ponds and fountains, but can include modified and artificially constructed spaces that contain natural surface water such as canals, dammed lakes or urban streams/rivers.

The researchers reported that blue space can have direct benefit for health, especially mental health and psychosocial wellbeing. Similar benefits have been reported for green spaces in the systematic review by Coon and colleagues.[62] In addition, outdoor sports are described as a contributor to bonding capital for families, groups and communities.[61]

The benefits of Open Streets

The phenomenon of *Open Streets* has been well described in an evidence brief by Bird and colleagues for Active Living Research:[63]

> "*Open Streets or Ciclovías temporarily repurpose city streets into car-free spaces for people, complemented by programmed activities fulfilling the intent of the program. These programs include encouraging physical activity, civic engagement, local economic development, community development, recovery and revitalization of public spaces and/or changing transportation behaviour through walking and cycling advocacy…[they] are ultimately a platform for change in any community – whether the goals are to improve community health, engagement, or advocate for more sustainable and human-scale cities*".[63]

Latin American cities that have implemented Open Streets programs have demonstrated increased opportunities for being active, social benefits and increased active transport (AT). Complementary activities are a common characteristic of Open Streets programs in comparison with other street closure festivals.

1.1.5 What are the economic benefits of a more active society?

The costs of inactivity have been described for more than 30 years. These include direct healthcare costs and indirect costs from productivity losses and home- and leisure-based production. Several studies have examined physical inactivity-related costs, whereas others have focused on the costs and benefits of sport or AT. Early estimates indicated the costs of inactivity in Australia to be around $377 million per year in 1999.[64] A subsequent study by Medibank estimated the costs of inactivity in 2008 to be $719 million in direct costs and $9 billion in indirect costs.[65]

A recent systematic review of economic costs of preventable disease and risk factors in Australia was reported in 2019 by Crosland and colleagues.[66] The greatest costs were related to the productivity impacts of preventable risk factors with up to A$15.6 billion in costs due to physical inactivity. These cost estimates were comparable to those attributable to obesity and greater than those due to alcohol or tobacco.[b] Estimates of attributable annual direct healthcare costs ranged from A$681.1 million to A$850 million, mostly due to cardiovascular disease, type 2 diabetes and falls.[66]

In a report to the Australian Government, KPMG assessed the value of community sport infrastructure in 2018.[25] The annual value to the community was estimated to be at least A$16.2 billion, with roughly a third of the costs related to health, another third to social issues and the final third to economic costs and productivity. Other studies showed higher estimates of the value of sport, with one study quantifying the return from the investment in sport in Australia and internationally.[23] They found that sport provides the Australian economy a combined value of A$83 billion in economic, health and education benefits each year[23]; and creates significant value with at least A$7 returned on every dollar expended in the sector. The Australian Bureau of Statistics have reported on the economic Value of Sport in Australia[24], estimating its combined value at A$12.8 billion in 2011–12.

1.1.6 What are the environmental benefits of a more active society?

A pressing challenge is climate change, pollution and related effects on human health. There is a current imperative for climate action to protect health from the major risks of climate change.[67] Thus, environment improvements are an important concern in coming years, and PA is linked in several ways to environmental improvement. Environmental benefits of a physically active society are predominantly discussed in terms of AT (e.g. walking and cycling) and urban planning to reduce carbon emissions. Improving neighbourhood walkability, quality of parks and playgrounds, and providing adequate AT infrastructure is likely to generate positive impacts on population-level activity in children and adults.[68]

As to parks and greenspace, studies conducted on the influence of greenery on mitigating urban heat island effects have indicated that all green spaces help urban areas adapt to the impact of these effects regardless of whether they are parks, street trees or green roofs.[69,70] The systematic review by Smith and colleagues found that the policy actions and interventions incorporating multiple streetscape components for walking or cycling in particular (e.g. a combination of sidewalk improvements and increased diversity of local destinations) were promising for increasing AT and PA levels in children and adults (refer to Chapter 3.3 for further information about interventions to support PA in the built environment).[68]

These authors reported that the evidence for increasing PA and AT was strongest for multiple streetscape components (adult PA, child AT), installation of fitness equipment (adult PA and AT), temporary road closures and play equipment (child PA), and recreation facility density (adult PA).[68]

Policies promoting AT could have a substantial impact on greenhouse gas emissions and would reduce disease burden by increasing PA.[20] In addition to promoting AT, other measures could contribute to reducing car use such as urban car restraint, parking pricing, car sharing/pooling and integrating bike sharing into public transport

[b] Note that major gains in tobacco control had already occurred, so that tobacco contributes less to cost than physical inactivity only in countries with advanced tobacco control measures such as Australia.

systems.[19] Temporary street closure events, such as the Open Streets initiatives described in Section 1.1.4 above, may also encourage changes to transportation behaviour. The systematic review by Mueller and colleagues reported that AT can provide substantial net health benefits, irrespective of geographical context and strongly outweigh any detrimental effects of traffic incidents and air pollution exposure.[17] Refer to Chapter 3.2 for further information about strategies to promote AT.

1.1.7 How can we categorise these co-benefits of a more active society?

A systems approach to PA requires the engagement of diverse sectors and agencies in order to develop the cross-sectoral strategies needed for PA promotion. A shared agenda is important to facilitate this partnership process. This involves sharing planning and policy agendas relevant to PA and to partner agencies from Government, NGO and private sectors, all of whom have contributions to make towards increasing PA at the population level.

The framing of common agendas may be based around the 'co-benefits of PA'. This concept was described more than a decade ago by the West Australian Physical Activity Taskforce[71] which based its framework for PA on a sharing of inter-governmental agendas, for example around transport and the built environment. Co-benefits that may be of relevance to other sectors include safety/injury prevention, social benefits, economic benefits, and environmental sustainability (focusing on carbon emissions and air pollution).[16]

A typology of potential co-benefits arising from PA-supportive built and social environments is shown in Table 3. Another way of categorising the co-benefits of activity friendly environments may be according to spaces e.g. (i) parks/open space/trails (ii) urban design (iii) transportations (iv) schools and (v) workplaces/buildings, as Sallis and colleagues have done in their detailed examination of co-benefits in a 2015 report[72] and subsequent journal article.[16]

Table 3. Co-benefits of physical activity – supportive built and social environments

Type of co-benefits	Sectoral engagement	Potential sectoral and societal benefits
Physical and mental health	Health	• Reduced risk of non-communicable disease and other disease risk • Improved mental health • Reduced healthcare costs
Social	Urban planning Local government	• Improved neighbourhood cohesion • Psychosocial wellbeing • Social capital
Economic	Urban planning Local government Workplaces	• Workplace productivity • Presenteeism • Reduced workplace healthcare costs • Increased land/property values • Increased retail income
Environmental, climate change	Transport and environment	• Reduced fossil fuel usage • Improved air quality • Increased active transport • Reduced congestion

Type of co-benefits	Sectoral engagement	Potential sectoral and societal benefits
		• Changed urban design including activity focused infrastructure • Increased and enhanced greenspace • Mixed land use
Safety advancement and injury reduction	Workplaces Transport (including roads)	• Reduced car accidents • Traffic calming • Increased safety • Reduced community crime and violence • Improved active transport infrastructure • Workplace health and safety
Creation of liveable community spaces	Parks and recreation Local government	• Improved play areas • Active living park space • Revitalisation of urban design • Public gardens
Academic performance, cognitive skill development and retention	Education	• Academic achievements • Cognitive skill development and retention across the life course including in older years
Functions of daily living and performance of other skills	Sport and recreation	• Community sport participation • Skills development, falls prevention in older people

Source: Adapted from Sallis 2015[16], BeActive WA 2009[71].

1.1.8 What are the recommendations for investment and action?

Three decades after Professor Jerry Morris identified PA as a (health sector) 'best buy' for CHD prevention, we can now identify PA as a multisectoral 'best buy', because of the multiple health and other benefits that accrue from a more active society (Table 3).

PA (including sport, active recreation and AT, in particular) is a 'best buy' for society *not only* because it prevents risk factors for disease (such as high blood pressure and weight gain) and protects against multiple chronic diseases (such as heart disease, stroke, some cancers, type 2 diabetes, and depression). In children, it also improves bone health, cardiorespiratory and muscular fitness, and body composition.

PA benefits people living with chronic disease by lessening the severity of their condition, as well as preventing disease progression and premature death, helping manage or reduce symptoms, and improving mobility. Regular PA is important for healthy growth and psychological development at one end of the lifespan, and at the other, contributes to healthy aging and may delay the onset of cognitive decline in older adults.

Sport itself is also one of the best investments for society and for the wider economy because it returns at least A$7 value on every A$1 expended in the sector, and because it can build social capital and wellbeing. AT has defined economic, social and environmental benefits. Failure to recognise and invest in PA as a societal and cross-sectoral priority would constitute a major missed opportunity. Ongoing inaction would see the direct and indirect costs of physical inactivity continue to rise, contributing to further negative impact on health systems, the environment, economy, community wellbeing and quality of life for all.[2]

1.1.9 What other strategies intersect with this area?

The information in this chapter can be useful for policy makers involved in developing a rationale for embedding PA in strategies or business plans. It can also be used by policy advocates who wish to make their case to elected officials.

In summary, the evidence for co-benefits of more active societies provides pathways that intersect with strategies relating to:

- **Health**: a wide range of physical and mental health benefits for general and special populations
- **Liveability**: planning for more liveable cities and towns
- **Strengthening communities**: boosting neighbourhood and social capital, social wellbeing
- **Environmental sustainability/climate change mitigation**: reduced carbon emissions, improved air quality, lower carbon cities
- **Safety**: injury reduction, infrastructure for active travel
- **Wellbeing**: such strategies are increasing across jurisdictions and PA is a major contributor
- **Economic growth**: sustainable infrastructure, productivity, reduced healthcare costs.

1.1.10 What are the implications for policy?

There is increasing recognition of the *co-benefits* of efforts to create a more active society. These benefits derive from the synergies across the sectors necessarily engaged in a comprehensive whole-of-systems approach to PA. The analysis of co-benefits from the implementation of PA programs and policies has been identified as an area of research where good progress has been made[3–20] but more emphasis is needed.[16,73]

A note of caution regarding the challenges in the area of AT is offered by Taylor and Thompson:[74] most people and households may not undertake any reportable AT usage, despite increasing policy support, education and promotion to encourage uptake. Less than one-quarter of the (Melbourne) population in their research recorded travel on foot and just over 2% by bicycle, although there were differences by gender and age. The implication for policy development and urban design interventions aimed at encouraging greater use of the active modes is that we still have a substantial way to go to achieve the levels of AT uptake necessary to contribute to environmentally sustainable and healthy communities.[74]

The following policy options are recommended with respect to the co-benefits of PA:

- Adopt a *multisectoral or societal perspective* (as distinct from a single-sector perspective, such as health) to promote and leverage the existing evidence of co-benefits from actions to create a more active society, particularly the co-benefits of:
  - Urban planning and infrastructure such as mixed land use and the creation of active spaces, parks and trails
  - Overall transport planning, public transport planning
  - Creating a safe environment for AT through traffic calming and building walking and cycling infrastructure such as bike lanes
- Use a systems science approach to examine, forecast and compare the health, economic and environmental outcomes of policies, programs and interventions designed to increase population-level PA
- Develop and test a dynamic simulation model of the complex system of behavioural, structural, and environmental factors that contribute to population levels of PA in the Australian context
- Develop a whole-of-government investment strategy with long-term funding commensurate with the economic burden of physical inactivity, the returns of investment at the whole-of-society level in terms of health, social and economic benefits as noted in the Intergenerational Review of Australian Sport
- Configure investment to ensure that efforts to achieve an active population, focus on those who are currently the least active and who have the most to gain by undertaking some regular PA of moderate to vigorous intensity; this is linked to an equity and social justice dimension within funding arrangements, noting the inequalities in participation by gender, cultural and linguistic diversity, ability/disability and socioeconomic situation
- Take a whole-of-life course perspective for investments designed to encourage participation, noting the drop-off in participation rates for organised sports among young adults and the need to take a broad, intersectoral perspective on movement solutions that are fit for purpose for the majority of people.

- **Co-benefits of PA accrue to sectors and settings beyond health and show the need for a cross-sectoral systems approach to PA recommended in the WHO GAPPA**
- **The co-benefits include:**
  - **Economic growth: sustainable infrastructure, productivity, reduced healthcare costs**
  - **Resilient communities: boosting neighbourhood and social capital, social wellbeing**
  - **Liveability: more liveable cities and towns**
  - **Environmental stewardship: climate change mitigation, reduced carbon emissions, improved air quality**
  - **Community health: a wide range of health benefits for general and special populations**
  - **Community safety: injury reduction, better infrastructure for active travel.**
- **Co-benefits must be explicitly identified to encourage growth of cross-sectoral strategies and partnerships to promote PA.**

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1.2 Are Australians active? Prevalence, trends and correlates of meeting physical activity guidelines

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1.2.1 Introduction

The purpose of this chapter is to describe the prevalence of physical activity (PA) among Australians. This involves understanding current PA guidelines and using population data to identify the proportion of people that meet those guidelines. If repeat population surveys are carried out in an identical fashion, then trends in PA can be monitored.

1.2.2 Purpose of monitoring and physical activity guidelines

Measures of population levels of PA are usually conducted through representative cross-sectional surveys that assess the prevalence of meeting PA guidelines. These are discussed, and the guidelines are also presented as part of a PA surveillance system (Chapter 5).

PA guidelines for Australian adults recommend a minimum of 150 minutes per week of at least moderate intensity activity[1,2], with recent updates to the evidence suggesting that benefits accrue across the range of 150 and 300 minutes per week. In addition, the adult guidelines recommend at least twice weekly strength training, and PA to improve balance, particularly among older adults where falls prevention is an important component of PA promotion. The guidelines for school-aged children and adolescents are 60 minutes a day of at least moderate intensity activity, with guidelines also for the 0–5 age group.[3]

There are several challenges in monitoring population levels of PA. The first is changes to the way PA is measured, with changes to the questions asked to assess PA. Even small changes to these questions result in large differences in the prevalence of meeting PA guidelines in the population[4], much larger than changes attributable to implementing optimal policy. As questionnaires evolve (e.g. by assessing new dimensions and domains of PA and adding measures of sedentary time and sleep to summate to a '24-hour movement continuum') there is substantial pressure to include these 'improved questions' in population surveys. This may preclude assessment of trends, and 'starting again with a new series using these better questions' has been unhelpful in assessing PA policy translation.[5] This area has become more complicated with the advent of device-based measures for assessing PA including accelerometers, other fitness trackers, step counters and motion sensing devices, integrated devices including heart rate responsiveness, GPS and smart phones, and even measures of direct observation or laboratory assessment of direct energy expenditures.[6,7]

Challenges to PA monitoring in Australia:

- Variations in questions between and within jurisdictions over time
- Changes to PA guidelines (e.g. amount of recommended PA; addition of new dimensions such as strength training)
- Variability in interpretation of PA guidelines (i.e. what amounts to 'sufficient PA' and how that is determined).

The second challenge is that our scientific knowledge has not remained static and neither has our science-based PA guidelines. Initial guidelines in the 1980s recommended aerobic activities (vigorous PA) three times a week for at least 20 minutes on each occasion. These were updated following the US Surgeon General's report on PA in 1996 to include consideration of moderate intensity activity, and the recommendation to accumulate 30 minutes a day of total daily PA. This was expressed slightly differently in different countries, but one Australian interpretation was "*5 times a week for at least 30 minutes on each occasion*". Included in this guideline was the concept of a minimum threshold, thought to be at least 10 minutes of continuous activity in order to derive a health benefit.

Updated 2018 PA evidence reviews have removed this minimum threshold.[8] Recent reviews have revised the PA guidelines to recommend "*at least 150 minutes a week*" (without the need for the number of sessions or number of days) and in some countries including an optimal range for adults, namely 150–300 minutes per week of at least moderate intensity activity. These differences have created confusion across jurisdictions in Australia, with different estimates based on using different guidelines (see box below for possible variants). Guidelines have become more complicated including dimensions of strength training and balance training, also thought to contribute to health in adults, but particularly difficult to measure in populations.

Possible variants of the adult PA guidelines currently in use in Australia

i. Meeting the current WHO aerobic PA guideline of 150 minutes/week of at least moderate PA (or 75 minutes of vigorous, or combinations thereof)

ii. Meeting the 2014 Australian interpretation of the WHO aerobic PA guideline – range between 150–300 minutes of at least moderate intensity PA (with increased benefits at the upper end of this range)

iii. Meeting the previous aerobic PA guideline – at least 150 minutes of moderate PA 5x/week (or its variant, 5x30 minutes)

iv. Meeting the strength-based guideline (resistance activities) – training 2x/week

v. Meeting the 150 minutes aerobic guideline (or variant) **and** the strength-based guideline

vi. Meeting a combination of the:

- 150 minutes aerobic and the strength-based guideline
- Sedentary behaviour guideline
- Balance guideline.

Note: Sedentary behaviour and balance are seldom reported; the threshold for sedentary behaviour is not clear for adults, and measurement problems limit the balance guideline.

Thus, the choice of guidelines poses challenges to prevalence estimation, which in turn contributes to different rates reported in different jurisdictions. Furthermore, estimates of the burden of disease attributable to physical inactivity are dependent on the prevalence of inactivity in population, which will be quite different given different ways of assessing it, which in turn will influence the relative importance of physical inactivity as a risk factor for poor health outcomes.

The above challenges are fundamental for policy makers, as they result from different population surveys that monitor PA. The speed of population change may be overestimated; for example, it would be of little use to have

five-year timeframes for a particular measure if one considers that it would take 10 to 20 years to influence PA with optimal policy focused initiatives. Therefore, several recommendations underpin this section:

1. Maintain consistent PA monitoring measures over a prolonged period, the length of the period being determined by the time in which change is considered plausible and feasible (for example, up to the WHO target of a 15% reduction in inactivity by 2030)
2. Use consistent measures and survey methods that can be compared across jurisdictions over time
3. Report which PA guideline is being used as the primary indicator of 'sufficiently active' and if necessary, report other secondary guideline-derived thresholds in order to monitor trends.

1.2.3 Measures used in monitoring the proportion achieving 'physical activity guidelines' with a focus on Australia

Self-report measures have been developed in different decades, and typically reflect the measurement needs of that period. For example, in the 1980s when there was an aerobic 3x20 recommendation for health, questions were asked about 'exercise and sport' typically of a vigorous nature.

These questions were used in the Australian Bureau of Statistics' (ABS) National Health Surveys from 1989 until 2011, with almost exact comparability in questions over this timeframe. Careful analysis adjusting for population and demographic changes during this period enabled trend assessment among adult Australians meeting PA recommendations, or trends in doing very little PA (less than 30 minutes per week).[9]

Subsequent surveys made changes to the National Health Survey questions including the addition of new questions to measure walking and other dimensions of active travel (AT), strength training and sedentary/sitting time, leading to a range of diverse ABS estimates of the proportion meeting PA recommendations. It is recommended that the original 1989 PA questions be used continuously in future National Health Surveys, and are asked first, such that estimates can be compared over longer timeframes.

The history of PA population measurement in Australia started following the 1996 US Surgeon General's report on PA and health. The Australian Institute of Health and Welfare (AIHW) commissioned the development of a new measure for self-report PA that took account of these new guidelines; this became known as the Active Australia survey.[10]

The Active Australia survey asked about the number of sessions and total time in the past week that people did: (a) vigorous PA; (b) walking; and (c) moderate PA. At about the same time, international measures for population PA were being developed – the IPAQ and GPAQ (International and Global PA questionnaires respectively). The short IPAQ was generic, included occupational PA, and provided higher estimates of PA prevalence than previous measures. GPAQ provided domain specific estimates, for both moderate and vigorous activity, which could be used to estimate AT, exercise recreation and sport, and domestic/occupational PA, but it was substantially longer than the short IPAQ.

At the state and territory level in Australia, different interpretations of the Active Australia (AA) survey and IPAQ/GPAQ measures were made and sometimes changed over time as improvements to the questions were suggested. This has made comparability difficult and suggests the need for standardisation and harmonisation of PA monitoring at the state and territory level.

The indicators for PA population surveys are based on the PA guidelines, revised in Australia in 2014. Note that there are still different ways of expressing these indicators. The purpose of Tables 4–6 is to illustrate the range of ways that meeting recommendations can be characterised, as described by the different ways in which questions are asked in existing population surveys.

Table 4. Adult physical activity (PA) guidelines and how they are operationalised in Australia

Descriptor from the PA adult guidelines for ages 18–64 years	How this is measured in Australian population surveys
"Be active on most, preferably all, days every week"	This cannot be operationalised as the PA questions in Australia typically ask about the number of sessions, not the number of days that activity was reported. Using GPAQ or IPAQ could estimate this. Sometimes, "five *sessions* and 150 minutes per week" is used to characterise this indicator.
Accumulate 150 to 300 minutes of moderate intensity physical activity or 75 to 150 minutes of vigorous intensity physical activity, or an equivalent combination of moderate and vigorous activities, each week	The lower limit here, 150 minutes per week, is the WHO 2010 guideline. The upper limit of 300 minutes per week, and incorporation of vigorous minutes can be easily computed. By convention, and consistent with physiology, vigorous minutes are multiplied by two and then added to moderate minutes and walking minutes. Note: Some surveys, the ABS NHS 1989–2011, asked only about moderate and vigorous exercise. State-based surveys often ask about walking as well (from the Active Australia survey), and sometimes include walking for recreation or leisure, and separately walking to get to or from places (AT).
"Do muscle-strengthening activities on at least 2 days each week"	Specific National Health Survey questions have been introduced since 2014 asking about this indicator, but the validity of self-report is not known.
Minimise the amount of time spent in prolonged sedentary time/sitting (or break up sitting)	This is an overall general guideline for adults. Note that the epidemiological evidence is not yet clear enough to produce a highly specific threshold or cut point for adults.

Table 5. Children and adolescent physical activity (PA) guidelines and how they are operationalised in Australia

Descriptor from the PA guidelines for children and adolescents 5–17 years	How this is measured in Australian population surveys
Accumulate at least 60 minutes of moderate to vigorous physical activity every day	This is measured through a range of different questions in the national health survey and in state-based surveys. The prevalence of NOT meeting this guideline is generally high for adolescents, typically ranging from 70 to 85% not meeting this guideline.[11]
Limit sedentary recreational screen time to no more than 2 hours per day	In some jurisdictions there are efforts to measure the screen time guideline, which is less than two hours a day for adolescents.

Table 6. Preschool aged children physical activity (PA) guidelines and how they are operationalised in Australia

Descriptor from the PA guidelines for preschool aged children	How this is measured in Australian population surveys
At least 180 minutes/day of PA [1–2 and 3–5 year olds]	This is described as 180 minutes of total daily activity, with at least 60 minutes being "*energetic*".
Sedentary screen time should be ≤ 1 hour total through each 24-hour period	Screen time should be in bouts of no more than an hour. Recent guidelines also added sleep recommendations [which differ by age], to summate to total 24-hour movement guidelines [activity + sedentary time + sleep time]

1.2.4 Population data and trends in adult physical activity participation in Australia

National Health Surveys (1989–90 to 2017–18)

The ABS National Health Survey are conducted every few years on a sample of households that are representative of the Australian population. Data over the past four surveys are shown in Figure 1, indicating the proportion of adults aged 18 to 64 years who met PA guidelines (referred to as PAG in this figure). The reference to meeting PA guidelines in Figure 1 refers to those who achieved at least 150 minutes of moderate to vigorous PA on five or more days per week. The definition of PA here included walking for fitness, recreation, or sport; walking to get to or from places; moderate exercise; and vigorous exercise (multiplied by 2) reported for the week prior to interview. Rates were age standardised to the 2001 Australian population.

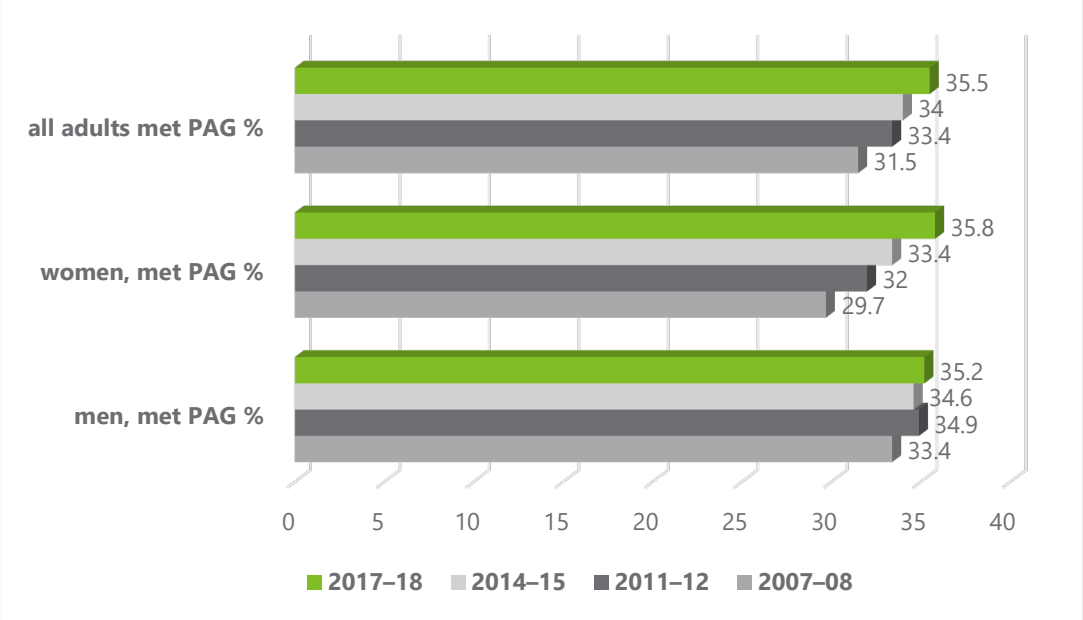

Figure 1. How active are Australians over time from ABS National Health Surveys 2007/8 – 2017/8 [based on % meeting 5x150 PA guidelines]

Source: AIHW analysis of ABS 2019; ABS 2016; ABS 2014 and ABS 2010.
PAG = physical activity guidelines

Overall, 47.8% of working age adults met this definition of the PA guidelines (light grey in Figure 2), with 43.6% if all adults are included (i.e. including those aged over 65 years) (dark grey).

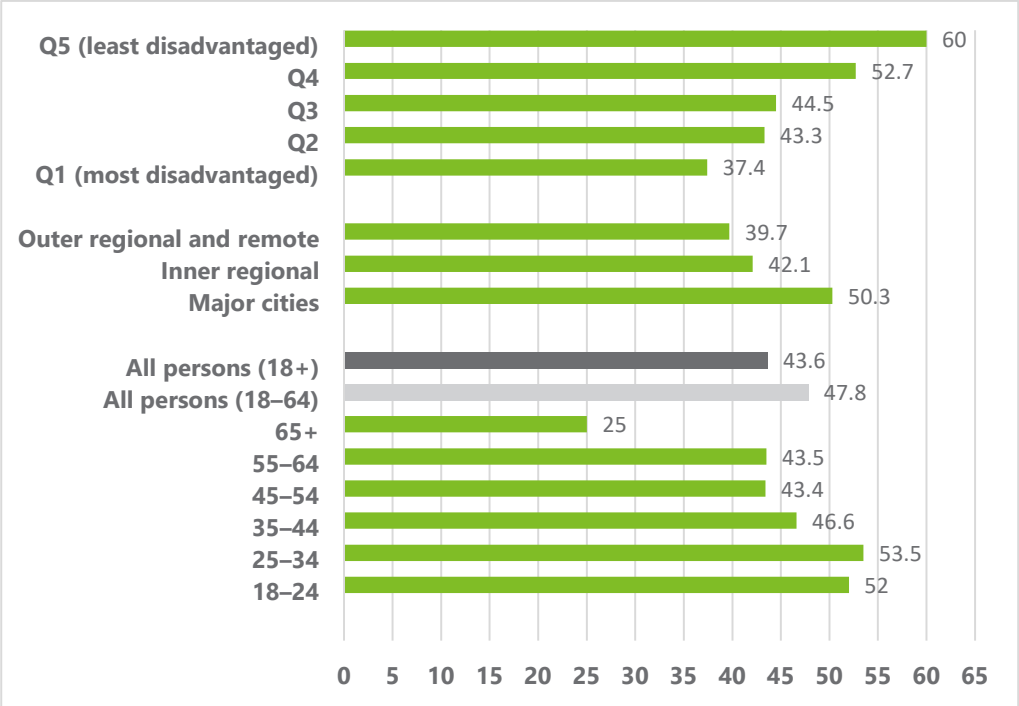

Figure 2. Variation in physical activity by subgroups, ABS National Health Survey 2014–15

Meeting the PA guidelines decreases with age, especially over the age of 65 years (Figure 2). There is also a lower rate of meeting PA guidelines in rural and remote areas, compared to cities, and a strong relationship with measures of social disadvantage. Those in the most advantaged regions are much more likely to meet the PA guidelines (60%), compared to 37.4% in the most disadvantaged regions.

Figure 3 shows the gender difference by age group; these differences between men and women are similar across different surveys and different definitions of meeting PA guidelines. Except for middle-aged adults, 3–6% more men achieve the PA guidelines compared to women.

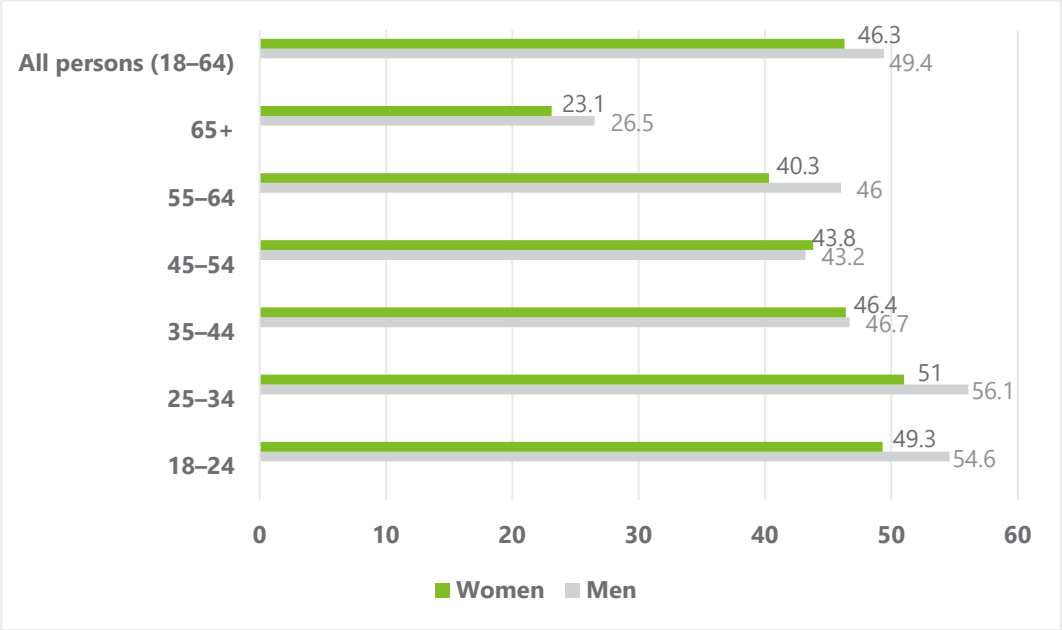

Figure 3. ABS National Health Survey 2014–15 Meeting physical activity guidelines by gender and age

Source: AIHW analysis of ABS microdata, NHS 2014–15.

Note: The analyses above reported the prevalence of '150 minutes AND 5 days/sessions' as meeting the PA guideline. More recently, the WHO PA Guideline specifies 'achieving 150 minutes of moderate activity, or 75 minutes of vigorous activity or a combination thereof', with no criterion of days/sessions.[1] Data for meeting this guideline are shown in Figure 4, and report an increase between 2007–08 and 2014–15, but minimal difference between 2011–12 and 2014–15.

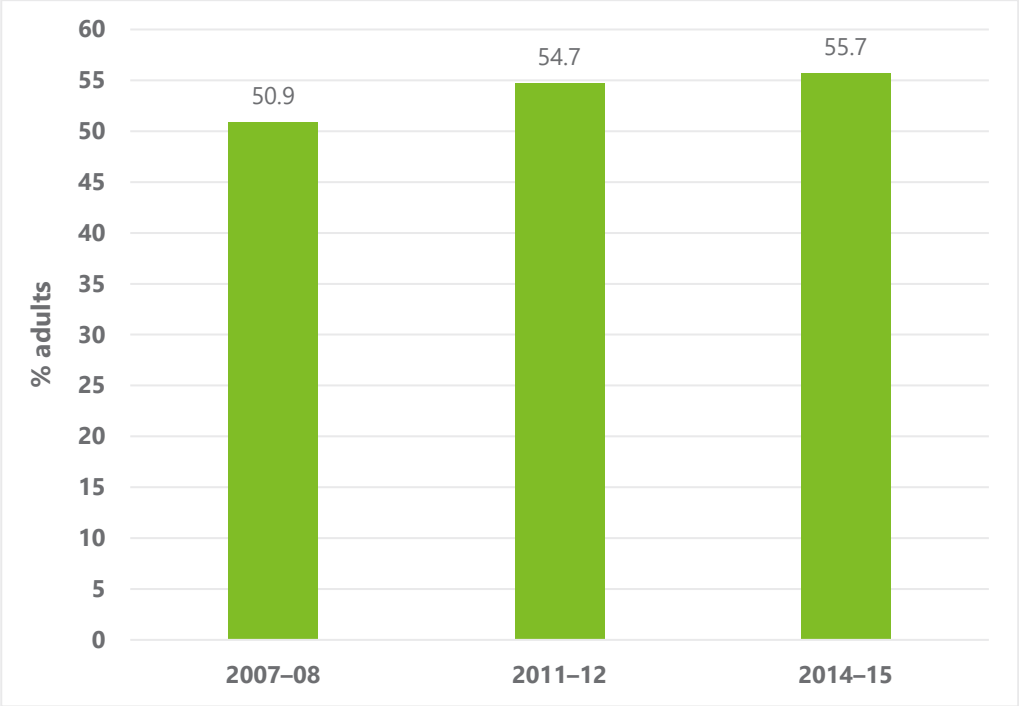

Figure 4. Trends in meeting the "150 minutes" recommendation [without the 5 days/sessions constraint] using the ABS National Health Surveys

NSW state-level trends using Population Health Surveys (2002–2018)

Data from NSW are presented because that state has, since 2002, collected annual telephone-based population data from representative samples of the NSW population using the same questions across survey years, as taken from AA. These surveys use a continuous rolling sampling schedule across the year, and since about 2015 included mobile phones in the sampling frame. 'Sufficient PA' is defined as ≥ 150 minutes/week over five separate occasions.

Comparisons with ABS National Health Survey

There are some differences in the approaches used by NSW and the ABS National Health Survey. For example, the NSW survey analysis includes all people aged at least 16 years, a slightly broader age range than the National Health Survey which report on data from adults aged 18 years and over. The NSW survey uses the exact AA questions, so their walking question incorporates walking for exercise and AT, whereas the National Health Survey asks about walking for AT separately from walking for exercise. Both surveys do not count gardening or household activity towards their calculation of sufficient PA, consistent with the surveillance approach recommended by AA. However, whereas walking is specifically excluded from the National Health Survey questions for moderate and vigorous PA (along with gardening and household activity), only gardening and household activity are specifically excluded from the moderate and vigorous PA questions in the NSW survey.

Some of these variations may account for the difference in prevalence estimates for meeting PA recommendations, which for example in 2014–15 were around 5% higher under the NSW survey than the same period using the ABS National Health Survey. A more likely reason for these variations is that the samples were obtained through

different modes of survey administration, with telephone-based surveys in NSW, and the ABS National Health Survey employing a random household-based sample.

Data trends in different groups

Examining the trends in PA in different groups has facilitated state-level population targeting of policy and programs.

NSW data trends in meeting guidelines are shown in Figures 5a and 5b, with the overall NSW rate described by the thicker dark grey line. The upper panel (Figure 5a) shows the trends at the appropriate scale; the lower panel (Figure 5b) zooms in on the trends by using a smaller range on the y-axis so that variation can be more easily seen.

Notably, people from a non-English speaking background showed similar rates of meeting PA guidelines to NSW as a whole. Aboriginal adults, shown in the light green line, showed substantial variability because of the smaller sample sizes each year, but were not substantively different to non-Aboriginal adults.

The most socially disadvantaged group, shown in the dark green reported consistently lower rates of meeting the PA guideline.

All groups showed an increase in meeting guidelines between 2002 and 2018, with the relative increase similar in high and low socioeconomic areas. Much of this increase appears attributable to increases in reported walking across all sociodemographic groups.[12] There seem to be two probable periods of increase, between 2003 and 2006, and then again in the period since 2013, attributable to changes in reported walking behaviour with no substantive changes in reported moderate or vigorous activity.

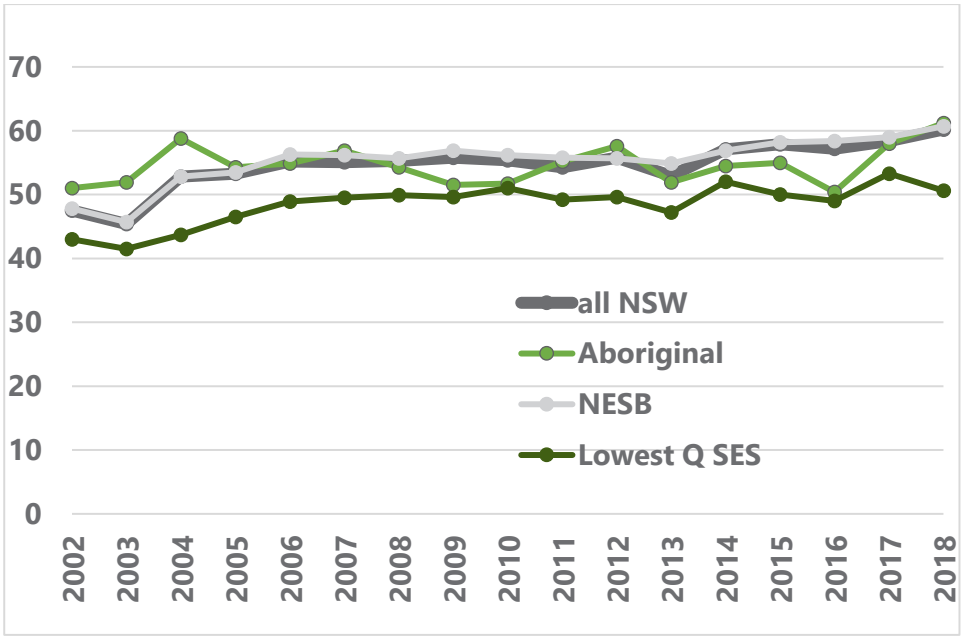

Figure 5a. NSW trends for adults 16+ years meeting PA guidelines of 5 x 150 minutes/week, Active Australia survey [usual Y axis scale]
PAG = physical activity guidelines; NESB = non-English speaking background; Lowest Q SES = lowest SES quartile

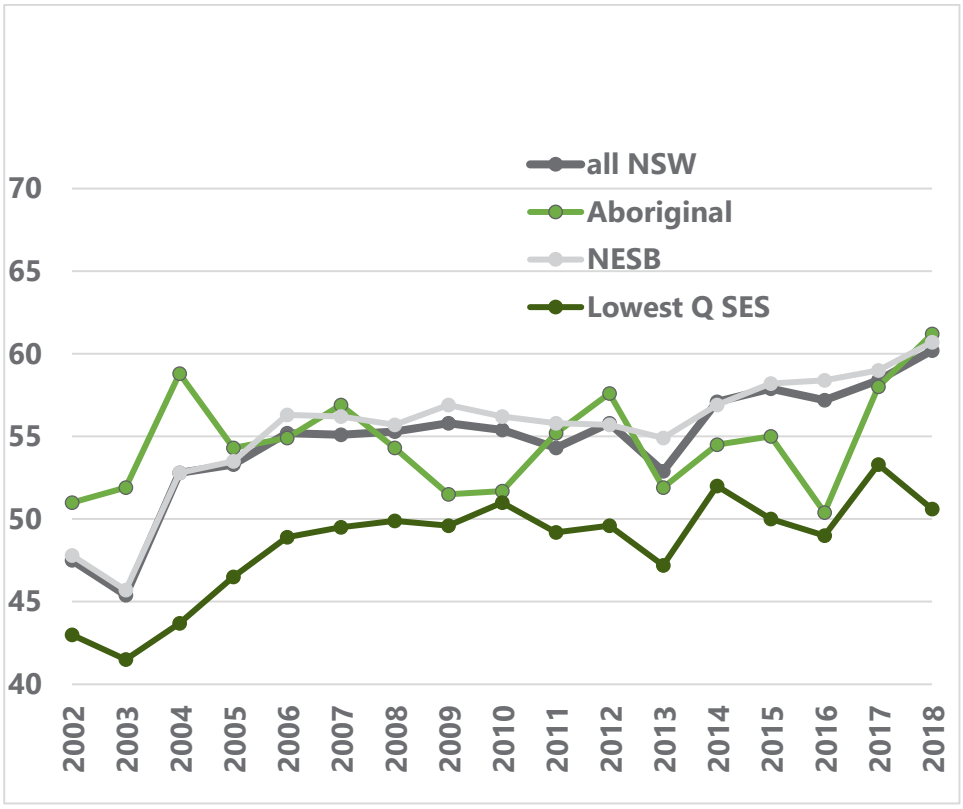

Figure 5b. NSW trends for adults 16+ years meeting PA guidelines of 5 x 150 minutes/week, Active Australia survey, 5 x 150 minutes/week [smaller y axis scale]
PAG = physical activity guidelines; NESB = non-English speaking background; Lowest Q SES = lowest SES quartile

1.2.5 Children and adolescents' physical activity in Australia

Overview of monitoring systems and guidelines

There are several different monitoring systems for assessing PA among children and adolescents (Table 5). The national PA guidelines recommend 60 minutes daily of moderate to vigorous PA for school aged children 5–17 years, and less than two hours/day of non-essential screen time.[3] In addition, the guidelines suggest muscle and bone strengthening activity three times per week, and recommend healthy guidelines for sleep.

Summary guidelines across the whole day are described as 24-hour movement guidelines and have been released for preschool age groups.[13] These reflect all activity, sedentary/sitting time and sleep across a 24-hour continuum. There are specific guidelines for younger infants and children aged 0–5 years[13]; for example, among children aged 3–5 years, these guidelines suggest three hours of total movement per day (of which 60 minutes should be "*energetic*"), limiting sedentary time to periods up to one hour, and 10–13 hours per day of good quality sleep.

The situation is more complex than among adults, with different questions used to assess children's and adolescents' PA in diverse population surveys across Australia. While these surveys all used representative samples, the use of different questions provide different estimates of the prevalence of children and adolescents meeting guidelines.[14] There are no regular population data collected on infants and young children as part of surveillance systems to date.

ABS National Health Survey

ABS National Health Survey data asked for parental report of their children's PA.[15] The National Health Survey 2011–12 indicated that around 39% of children aged 2–5 years did less than the recommended three hours/day of activity. Three-quarters of children aged 5–12 years, and 92% of adolescents aged 13–17 years did not meet the

recommended 60 minutes of PA every day. Further, two-thirds of children exceeded the recommended limit of two hours of screen time.[15,16] These data are shown in Figure 6 below.

The guidelines further recommend children and adolescents undertake muscle strengthening activities at least three times a week; this was only asked of 15–17 year old adolescents, of whom 22% of boys and 8% of girls met this guideline (16% overall in this age group). Boys were more active than girls, but the socioeconomic differentials in PA seen in adults in the National Health Survey and in AusPlay data were not present in these National Health Survey data. Aboriginal and Torres Strait Islander children were more physically active than non-Aboriginal children at both primary school ages (60% meeting guidelines) and adolescents (45% met guidelines).

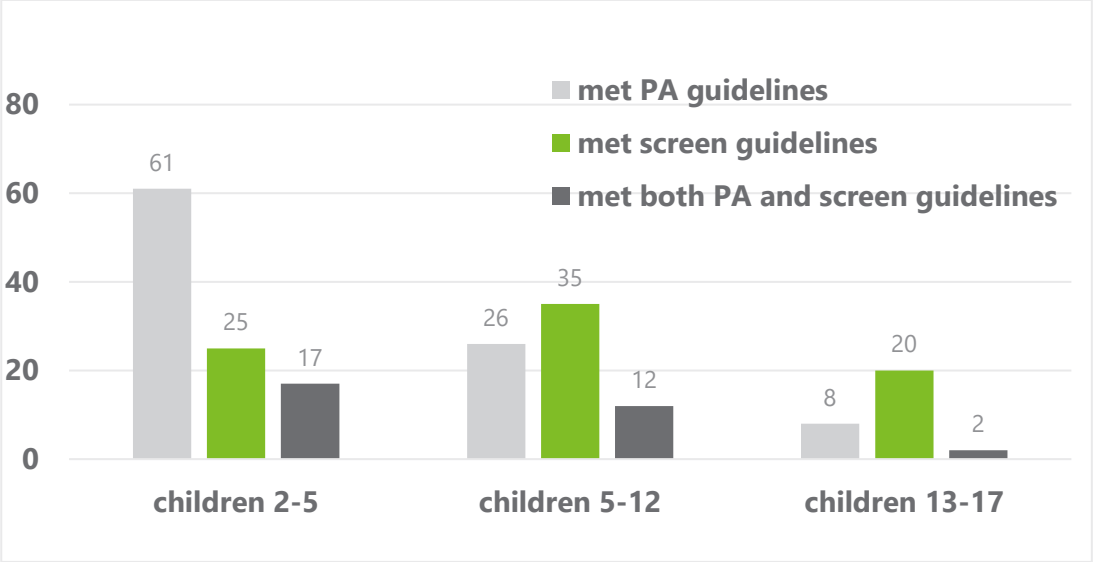

Figure 6. National Health Survey 2011–12 Percent meeting age-specific physical activity guidelines – Australian children and adolescents

AusPlay surveys

Another large-scale population survey is the representative AusPlay surveys, carried out by Sport Australia.[17] Data obtained in 2016 and 2017 comprised 7000 parents reporting on their children's participation in PA and sport outside of school in the previous 12 months.[18] Between 70 and 74% in 2016 and 2017 respectively participated in any activities in the previous year. Although not a health-specific indicator, the AusPlay survey reported "*regular participation of three times a week or more*" as an indicator for sport, and this was reported by 20% in 2016 and 25% in 2017.

Boys were slightly more active than girls in all ages in childhood and adolescence, except for preschool-aged children (0–4 years). Organised PA were more commonly reported by more advantaged socioeconomic families, and by urban residents (compared to remote residents). Children from non-English speaking cultural backgrounds were less active than those from English speaking backgrounds. An important limitation is that AusPlay describes organised PA, which is a subset of all PA in children and adolescents, as the AusPlay survey excludes some incidental activities including AT, active play and non-organised informal activity.

Active Kids Healthy Kids monitoring

A worldwide comparative research project has monitored policy and prevalence of PA among children and adolescents.[19] This project, the Active Kids Healthy Kids (AKHK) Global Matrix project, has collected data from 49 countries and provided ratings from A to F for indicators of policy and progress supporting children and adolescent PA. Overall, the AKHA report (2018) [20] rated Australian PA levels as a D–, indicating a low level of children and adolescents meeting PA guidelines, compared to other countries. This was unchanged from the ratings awarded in the earlier 2016 report card, where sedentary behaviour was also awarded a D– grade (AKHK

2016)[21] and a D– in 2014[22]. This was further confirmed in an updated worldwide scan of adolescent PA, which positioned Australian adolescents as among the least active in the world.[11] For screen time, Australian children and adolescents scored a D– rating, which was also awarded for AT to/from school. Access to a PE teacher scored a B+ rating, and having access to parks, playgrounds and living in safe neighbourhoods scored an A– rating. Investment and policy initiatives scored a D, but were released before Sport Australia released the *National Sport Plan* in 2018 (see Appendix 1 for a summary of this Plan). Australian children typically rated a B score for sport participation, which indicates reasonably good rates of sport participation, but sport alone may be insufficient to drive overall proportions meeting PA guidelines.[22]

Other monitoring systems

Other data systems exist [references available on request]. These include state-based systems, which sometimes collect children's PA data by parental report. Other population surveys, such as the triennial Australian Secondary Students' Alcohol and Drug Survey, have additional modules for PA and other health behaviour. In NSW, there were serial Schools Physical Activity and Nutrition surveys (SPANS) up to 2015 which measured PA objectively, tracking measures of fitness and fundamental movement skills over time.

There are also several cohort studies, such as the Longitudinal Study of Australian Children (LSAC), that are assessing PA over time in large samples of children from birth to adolescence and beyond. These different systems measure PA in different ways, so produce different prevalence estimates, and occasionally change questions to 'improve the validity of measures used', but at the expense of losing information on trends over time.

1.2.6 Physical activity prevalence in special populations

Special populations and variations in physical activity within subgroups

Numerous population studies have suggested that men are more active than women, and although this is consistent in self-report measures, data from the pedometer-based ABS National Health Survey in 2011–12 showed less gender variation among middle-aged adults in mean step counts by gender.[23] From self-report surveys, this is likely due to underestimation of household and incidental PA among women, or omission of these domains in mainstream studies. The gender divide starts in childhood, and by early adolescence, objective studies suggest that girls are less active than boys throughout adolescence.[23] This highlights the importance of gender specific strategies in this period, as they also are in cultural groupings through adolescence where activity is different for girls and boys.

PA decreases with age, initially after young adulthood, leading to the middle aged 'slump' in activity due to work and family responsibilities that take up more time. Subsequent declines occur especially after late middle age (50s), with all dimensions of PA declining substantially in the late 60s and 70s, whether measured by self-report or objectively. A few international exceptions exist, but in Australian populations this is the usual pattern.

PA is also distributed by other parameters, including rurality (overall, remote rural adults are less active), language spoken at home (people from diverse cultural backgrounds may be less active, especially those from South Asia, East Asia and the Middle East), and socioeconomic gradients occur in most PA measures, with the lowest activity and lowest organised sport participation among the most disadvantaged.

Other factors associated with low PA at the population level include aspects of the built environment and transportation systems, social isolation, and those with chronic health problems including mental health.

Specific details below relate to two important groups for chronic disease prevention, Aboriginal and Torres Strait Islander people, and people with disability.

Aboriginal and Torres Strait Islander peoples

PA prevalence among Aboriginal and Torres Strait Islander peoples has been collected by special ABS surveys in 2012–13[24] (with the only example of trend data publicly available shown in Figures 5a and 5b from NSW surveys). These results focused on non-remote Aboriginal populations. Adults aged 18 years and over reported an average of 39 minutes/day of PA, with 38% meeting the 5x150 minutes PA guideline in 2012–13.

Among the sample of remote living residents, 55% met the PA guideline, especially through walking, but also through traditional activities. A subsample of the non-remote residents participated in the objective pedometer assessment, and an average of about 7000 steps/day recorded. These data were compared by ABS with non-Aboriginal adults, and showed that age-adjusted, non-remote resident Aboriginal and Torres Strait Islander adults were slightly less likely to meet PA guidelines (rate ratio 0.8), and slightly less likely report any PA (rate ratio 0.9).

Aboriginal and Torres Strait Islander children and adolescents aged 5–17 years in non-remote areas reported around two hours per day on PA, substantially more than non-Aboriginal children and adolescents. Around 48% met the 60 mins/day PA guideline, compared to 35% among non-Aboriginal children. Among Aboriginal children from remote areas, even more (82%) reported meeting the PA guideline. The Aboriginal children and adolescents in the objectively measured pedometer study averaged 9500 steps/day. Aboriginal toddlers and preschoolers (aged 2–4 years) in non-remote areas were reported to spend around 6.6 hours/day being active, with more outdoor time than non-Aboriginal children.

Australians with disability

Rates of PA participation are substantially lower among people with disability compared to people without disability.[25] Meeting PA guidelines was lower among working aged adults with disability (34.6% compared to 50% of non-disabled people). People who were classified as having severe disabilities had even lower rates (typically less than half as active as the non-disabled population). Among older adults aged 65 and over with disabilities, 17.2% met the PA guidelines compared to 37.8% of those without disabilities.

1.2.7 Policy implications of prevalence data for adults and children

There are challenges to assessing the proportion of Australians that are physically active, among both adults and children. It seems that somewhere between 30 and 55% of adults achieve the minimum PA guideline recommended by the WHO and by the Australian Government Department of Health, but this variation is determined by different interpretations of the guidelines, and by different survey questions used. Most survey systems use the most recent '150 minutes/week' of moderate-vigorous activity as in the current WHO recommendation, others use the slightly older '5 days x150 minutes' criterion. Some surveys ask about strength training 2x/week and include that in the proportion 'meeting recommendations', resulting in fewer than 20% achieving the 'total PA recommendation'.

It is important to maintain consistent survey methods and measures over a prolonged time period to determine trends in the proportion of those meeting guidelines. The timeframe for consistent monitoring should be determined by the estimated period that optimum policy implementation will take to produce the required increases in PA.

Australia is a signatory to the WHO global monitoring framework, which targets a 15% reduction in physical inactivity by 2030[a], suggesting exactly comparable, consistent measures to 2030 should be sought. Survey reports

[a] This was described as a 10% reduction by 2025 (see www.who.int/nmh/global_monitoring_framework/en/) but has been updated to coincide with the Sustainable Development goals with the target adjusted to a 15% relative reduction in physical inactivity by 2030 [see the WHO Global Action Plan on Physical Activity (WHO 2018)[2]].

should identify exactly which interpretation or combination of PA guidelines are being measured by the indicator chosen, so the differences in prevalence can be understood more easily.

An example of PA measurement consistency occurs in the US, through the Behavioral Risk Factor Surveillance System (BRFSS). Identical questions are asked to collect data at state level, with the measures and methods overseen by the national Centers for Disease Control. This provides agreed national data collection, which can be compared across jurisdictions, as well as providing detailed state-level estimates. Changes to the PA are agreed nationally (and have occurred once since 1986). Overall, the system has enabled clear assessment of trends, regional gaps, and national correlates to be established and monitored.

This approach to standardisation of measures will require substantial cross jurisdictional effort, policy congruence and methodological convergence. Such harmonisation would be possible given a national PA plan, as this would inform the monitoring component.

Key recommendations:

- **Maintain consistent PA monitoring measures over a suitably long period (e.g. to 2030)**
- **Use consistent and identical measures and survey methods to enable comparability across and within jurisdictions over time**
- **Report which guideline is being used to derive the 'sufficiently active' indicator.**

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2. Whole-of-systems approaches

2.1 Whole-of-systems approaches to physical activity

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Note: Chapter 2.2 describes the Australian context and the physical activity systems mapping work undertaken by the Australian Systems Approaches to Physical Activity (ASAPa) project. This chapter describes how whole-of-systems approaches (WSAs) to physical activity contribute broadly to a more active society.

2.1.1 How does this area of work contribute to a more active society?

While efforts during the 1990s to take a multisectoral approach to physical activity (PA) in Australia and elsewhere showed promise, subsequent efforts over two decades have not improved PA participation rates in the adult population.[1-3] There is growing recognition that many complex public health problems, such as obesity and physical inactivity, are not amenable to simple, single solutions. This has led to increasing interest in whole-of-systems approaches to identify effective mechanisms for tackling them. Effective action requires an integrated, system-wide approach[4] in consultation with policy makers and stakeholders from multiple sectors.[5] WSA is at the heart of the WHO *Global Action Plan on Physical Activity 2018–2030* (GAPPA) – Objective 4 of the plan is "*create active systems*" (see Appendix 4 for an overview of GAPPA).[6] The related Action Statement 4.1 explains how WHO would like to see this objective translated to action:

> **Create Active Systems (GAPPA Action 4.1)**
>
> *Strengthen policy frameworks, leadership and governance systems, at the national and subnational levels, to support implementation of actions aimed at increasing physical activity and reducing sedentary behaviour, including: multisectoral engagement and coordination mechanisms; policy coherence across sectors; guidelines; recommendations and action plans on physical activity and sedentary behaviour for all ages; and progress monitoring and evaluation to strengthen accountability.*
>
> WHO GAPPA (2018)[6]

A commentary by Peters, addressing the question 'why use systems thinking?' [7], puts it nicely, as follows:

> *"Systems thinking adds to the theories methods and tools we otherwise use…and provides new opportunities to understand and continuously test and revise our understanding of the nature of things, including how to intervene to improve people's health… "*

To help explain a WSA from the point of view of the relevant organisations involved, it may be helpful to consider using a bicycle as a metaphor (Figure 7). The bicycle has many separate parts. No single part, working in isolation, operates the system. The bicycle can only be ridden when all parts work together; yet this alone is not enough to move the bicycle. A 'rider' is needed to coordinate and get the components of the system working together to enable the bicycle to move forwards. The function of the system overall is different from the sum of the individual parts.[8]

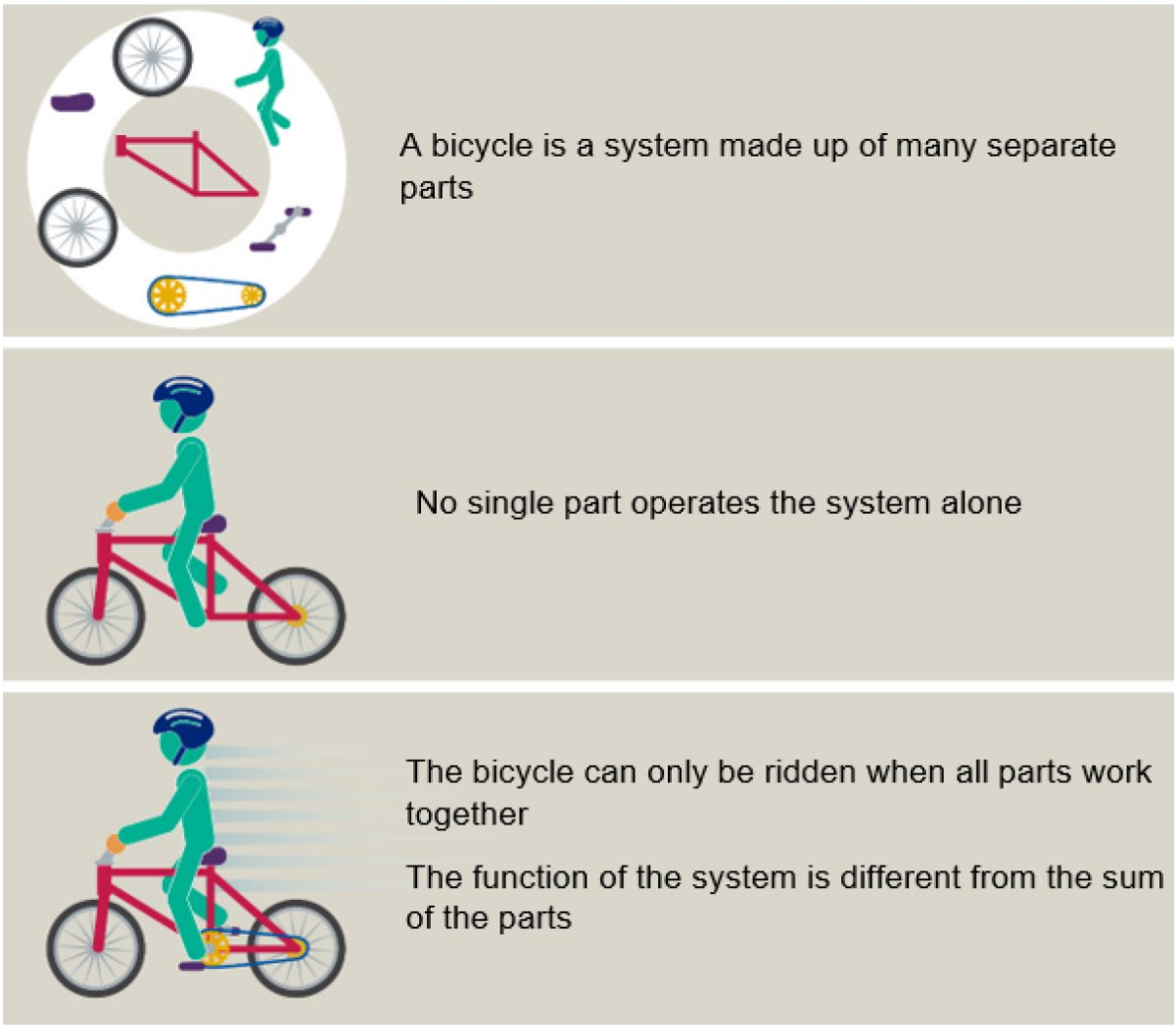


Figure 7. Using a bicycle: a simple metaphor to explain systems approaches

Source: Public Health England.[8]

Similarly, a WSA for PA includes many separate sectors, agencies and organisations. No single sector, agency or organisation operates the whole system overall. The overall PA system can only work properly, optimally, when all the sectors, agencies, organisations are working together. The function of the PA system as a whole is different from the sum of the individual component sectors, agencies and organisations. In other words, in an organisational sense, *the whole PA system is greater than the sum of the individual partners.*

In Australia, as elsewhere in the world, there is a need to improve on our results in getting people and communities more physically active throughout the stages of life.[6,9] This is not to say that our PA system is 'broken', but rather that we can diagnose and make improvements to fine tune the way the PA system performs its intended function, for all of the population across all life stages.

2.1.2 What is the supporting rationale?

Whole system thinking focuses on understanding interrelationships, interactions, and various perspectives of a system, including the boundaries of that system. It is enhanced by complexity science which emphasises that systems reflect dynamic, often unpredictable interactions among diverse, constantly adapting parts. Drawing on complexity science, WSA may be used to conceptualise the PA system as a *complex adaptive system* — a collection of interacting entities that continually change in relation to one another and their collective environment.[10] The changes one might expect in ways of working in transitioning from more traditional approaches to WSAs are shown in Figure 8, adapted from Public Health England.[8] It is argued that the advantage of WSA is that it takes into account the changing context, its key actors, and their interactions over time in understanding health, thereby allowing planners a better understanding of the system, of 'how things work' and of where and how to intervene to improve health outcomes.[10-12]

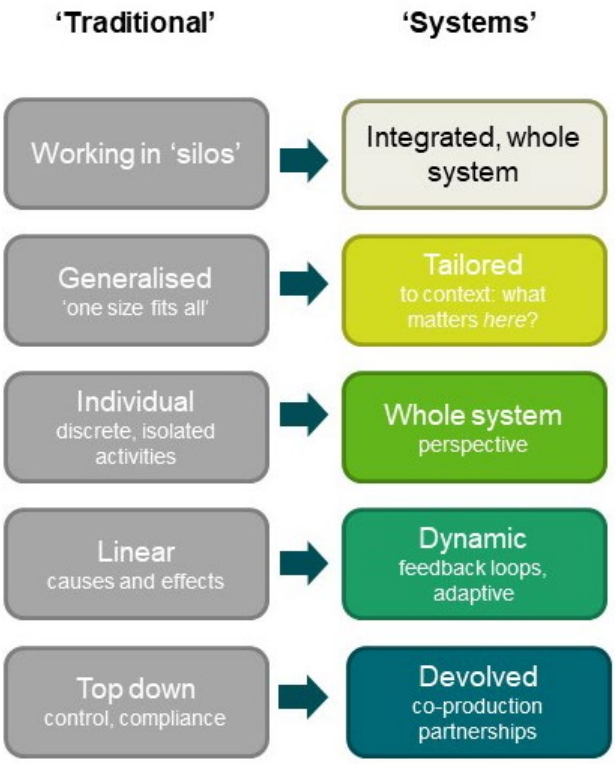


Figure 8. Contrast of traditional and systems approaches to ways of working

WSAs to PA (and to public health more broadly) are a relatively recent phenomenon and sit more in the theoretical than applied domain of practice. More work is needed to achieve clarity and consistency in the concepts and language used by academics and others who engage in these approaches. Some scholars have dealt more with describing and investigating complex adaptive systems[13], while others have focused more on systems thinking as a practical way of helping people understand a problem or an operational context.[7,14,15] We can define a continuum of approaches to whole-of-systems thinking, ranging from basic cognitive mapping through to advanced dynamic modelling[16-22] (Figure 9).

Not every aspect of WSAs in this continuum needs to be adopted, however components of WSAs should be adapted as appropriate by all working at the national, regional or local level. For example, a visual depiction of PA influences which exist and operate within a given context (LGA, town, city, region), undertaken by key stakeholders is increasingly recognised as a valuable approach, and especially so where community engagement and co-production is emphasised.[23,24] This corresponds to the *Initial scoping* and *Conceptualisation* components shown in

Figure 9. All policy makers and stakeholders involved in the promotion of more active populations are encouraged to use this process as part of their approach to planning, implementation and evaluation.

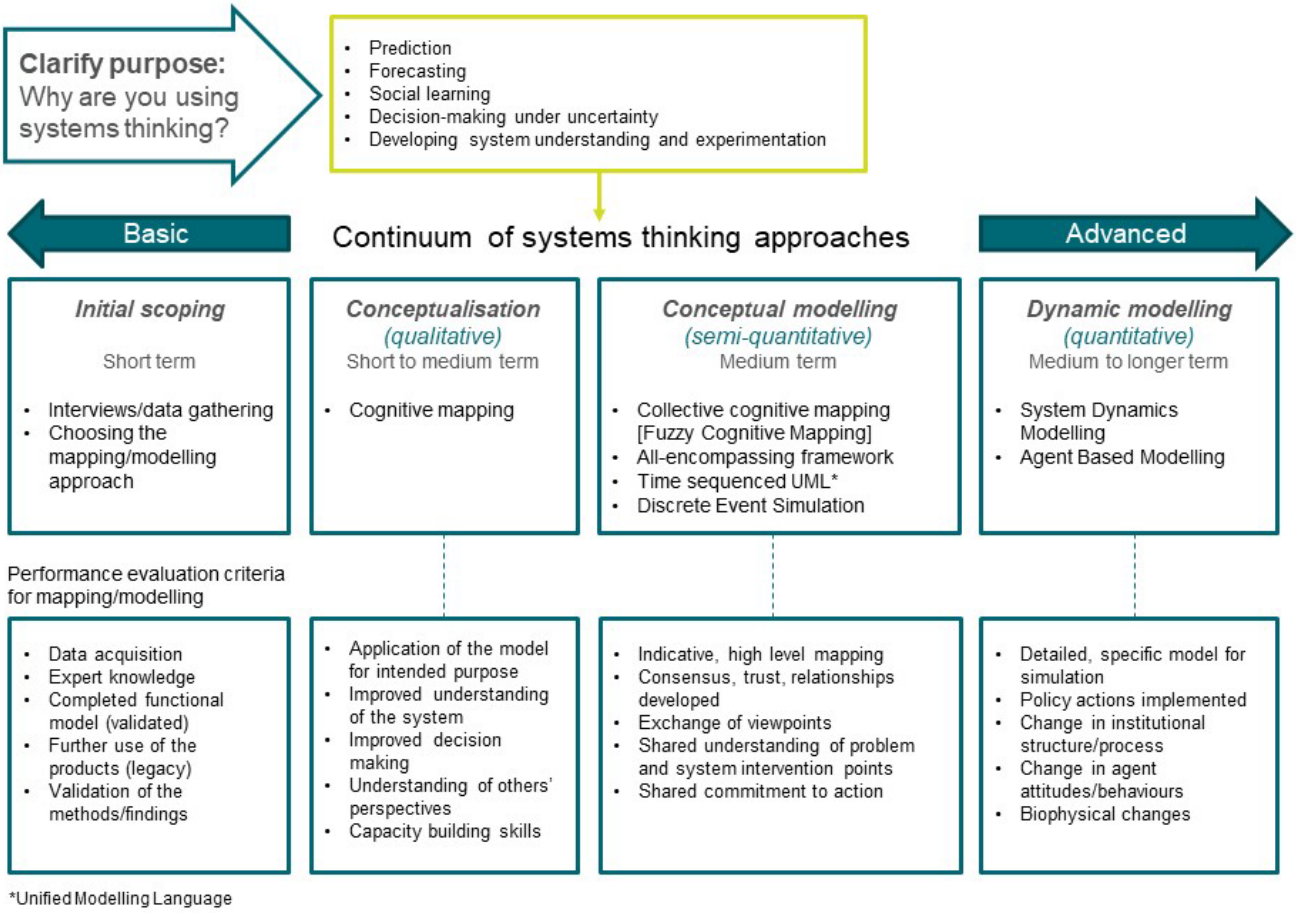


Figure 9. A continuum of systems approaches

Source: Bellew et al 2019[25] adapted from Stave and Hopper 2007[19], Kelly et al 2013[20], Elsawah et al 2015[16], 2017[17], Voinov et al 2018[18], Hamilton et al 2019[21], Pluchinotta et al 2019.[22]

2.1.3 What are the recommendations for investment and action?

Potential ways to use WSAs

Notwithstanding the evolving nature of WSA, its applications are many and include:[7,23,26]

- Providing a nuanced depiction of the multisectoral and complex nature of PA as a problem in your specific context or region
- Helping understand how a PA program works/is supposed to work
- Identifying gaps in current activity or service provision
- Identifying areas where we wish to gather data, evaluate, generate hypotheses
- Predicting how a scenario may unfold/scenario planning
- Testing the viability of PA policy interventions in a safe and inexpensive way; systems maps may be used as the basis of system dynamics and other models to explore causal mechanisms and potential impacts of interventions.

Key considerations

In terms of recommended investments and actions, we offer the following considerations:

a) The WHO GAPPA states that increasing PA requires a systems-based approach – there is no single policy solution.[6] GAPPA includes five policy actions outlining the investments needed to strengthen the systems necessary to implement effective and coordinated international, national and subnational action to increase PA and reduce sedentary behaviour. These actions address:

   - Governance
   - Leadership
   - Multisectoral partnerships
   - Workforce capabilities
   - Advocacy
   - Information systems
   - Financing mechanisms across all relevant sectors in a WSA to PA.

b) The *process of collaboration to build a map* can contribute to building consensus on the nature of a problem and engagement with the potential range of policy responses required. The *insights gained by participating stakeholders* may be more important than the map itself. This is a planning and conceptual process. Not every relationship in the systems map will be underpinned by clear epidemiological evidence, rather the stakeholders who develop the map will make assumptions about likely pathways to define the tasks and planning needs for the WSA to be translated into practice.

c) It is not necessary to start with a blank page when developing a whole-of-systems map of PA. For example, to support the implementation of GAPPA, Rutter and colleagues used the known or likely correlates of PA to map the multiple factors underpinning the different domains (Figure 10).[23] This map, or the map developed for Australia, shown in the next section, could be used as a starting point in its existing or in adapted form, to commence the process of developing a systems map for a given local planning/implementation context – for example a state or municipal level multisectoral plan for PA.

d) Progression to dynamic modelling: Maps provide an opportunity for stakeholders to explore the broad 'system space' and better understand the pathways and interrelationships between multilevel factors that drive a complex problem. These maps describe a complex causal hypothesis that helps identify innovative options for intervening that might lie outside the usual scope of a single stakeholder's perspective and helps build stronger alliances for collaborative action.[27] Progression to dynamic simulation modelling enables the hypothesis to be tested using processes of quantification, calibration and validation through ensuring the computer model is able to reproduce historic data patterns across a range of indications. The final model can then be used as an interactive 'what if' tool to test alternative scenarios and assumptions and forecast their likely impact over the short and longer term before they are implemented in the real world – saving time and resources.

Dynamic simulation modelling

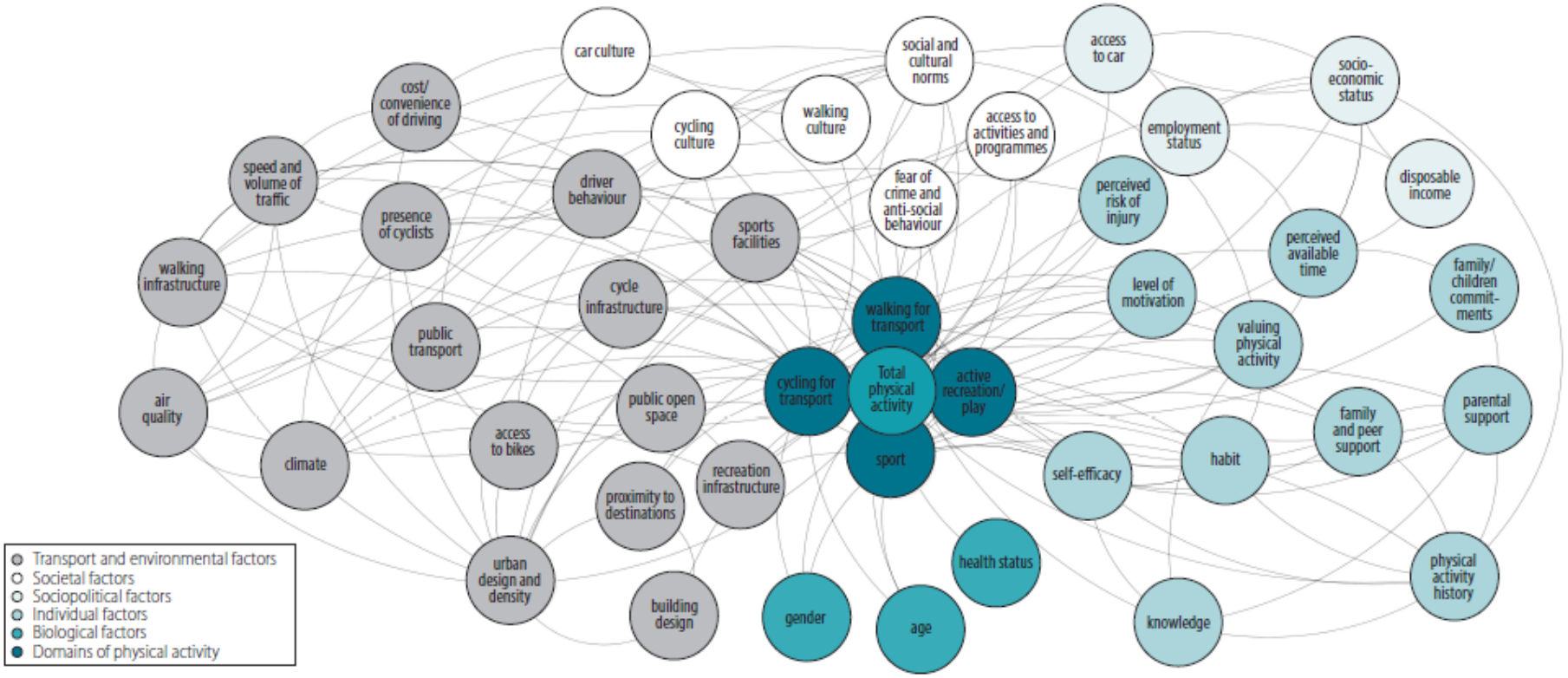
Decision making regarding how best to address the complex problem of getting Australia active is challenged by the multisectoral determinants of PA, a vast array of potential intervention options supported variably by the evidence, geographic variation in infrastructure, programs, services and workforce available to support PA, changing population needs over time, and competing views and agendas about what should be done. Without the appropriate decision support tools to manage complexity and to navigate the challenging decision-making environment, there has been a move towards the implementation of so-called 'comprehensive' strategies (invest a little bit in everything deemed likely to be effective), based on the rationale that if more evidence-based interventions and services are implemented, then the impact is likely to be greater. However, such comprehensive strategies often lack focus or sufficient actual investment in time, resources and capacity to implement at scale.

Consequently, comprehensive approaches may actually undermine the potential impact of investments by spreading available resources too broadly over a range of poorly targeted programs and services.

Much of the research that informs decision making to improve PA emphasises single programs, static, linear, program logic-based evaluation approaches, and assume simple additive effect of interventions that are inadequate for assessing how intervention strategies will play out in complex systems, potentially leading to disappointing results.[28]

In contrast, dynamic simulation models uniquely capture the population and demographic dynamics, behavioural dynamics, service and workforce dynamics and interacting intervention effects that can influence the effectiveness of intervention strategies in real world contexts. They bring together best available evidence, data and expert and local knowledge and represent our best understanding of a complex problem in a given context. These sophisticated decision support tools can assist in focusing investments in a suite of interventions that would work well together and are forecast to deliver optimal impact.

Australian applications of dynamic simulation modelling in chronic disease in recent years has highlighted the value of participatory processes in facilitating model transparency, validity and credibility, communication and intellectual exchange, the advance of contentious debates, and the building of consensus among stakeholders. The transparent and interactive interfaces of the models allow stakeholders to run scenarios and collectively weigh up the quantitative trade-offs of alternative intervention combinations. They also facilitate collaboration between the different factions in the public health community and more broadly, help to align agendas for action and make recommendations with a united voice.



Note: This map provides an illustration of some of the main drivers of physical activity and inactivity, and the relations between them, based on evidence from systematic reviews and expert opinion. The map is a tool to illustrate the breadth of factors driving physical activity, and does not purport to provide a definitive description of all possible ways of conceptualizing the physical activity system.

Figure 10. An initial PA systems map

Source: Rutter et al 2019.[23]

2.1.4 What other strategies intersect with this area of work?

WSAs to PA intersect and integrate with multiple policy and intervention domains for PA. WSA maps can contribute to communicating these multiple factors and the cross-sectoral nature of the influences on PA for policy makers. The maps can illustrate the range of opportunities to implement policy actions across multiple areas to influence the system; demonstrate the breadth of partnerships needed (including outside the health sector); identify key areas for action that may represent opportunities for significant impacts on policy; support analysis and identification of priorities for action; support the development of tailored local-level maps that include important contextual factors; help audit existing policy actions or plan new ones; and inform monitoring and evaluation.[23]

2.1.5 What are the implications for policy?

A WSA provides a framework for understanding inter-relationships, interactions and various perspectives in the PA system. This allows policy makers to better understand how different parts of the system currently work and interact, and where and how to intervene to improve PA and other complementary outcomes. The process of collaborating with others from different sectors to develop a systems map for PA can help build consensus around the nature of the problem and stimulate engagement around the policy responses required, and opportunities for collaborative action. There is no need to start from scratch, as the map developed by Rutter and colleagues for PA[23], or the map developed for Australia (shown in Chapter 2.2), can be adapted or developed further to suit a given purpose or context.

The initial process of conceptual systems mapping can later progress to dynamic simulation modelling to support decision making about the optimal types and mix of intervention strategies to deliver greatest impact. This is a participatory process that brings together best available evidence, data and expert and local knowledge, and enables stakeholders to run scenarios and collectively assess different intervention combinations, thus further strengthening consensus and alignment of agendas for action.

- **In an organisational sense, the whole PA system is greater than the sum of the partners (and the individual sectoral programs)**
- **The Australian PA system is not 'broken', as such, but we can make improvements to fine tune the way the PA system performs its intended function, for the whole population across all stages of life**
- **Whole-of-systems approaches are built on a participatory process that brings together best available evidence, data and expert and local knowledge, and enables stakeholders to better align agendas for action.**

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2.2 A whole-of-systems map for physical activity in Australia

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Note: Chapter 2.1 provides a general background on WSAs to PA and how they contribute generally to a more active society. This Chapter 2.2 deals more specifically with the Australian context and the mapping work undertaken by the Australian Systems Approaches to Physical Activity (ASAPa) project. Chapter 2.3 deals with governance and leadership aspects of WSAs, while Chapter 2.4 covers capacity building for WSAs.

2.2.1 How does this area of work contribute to a more active society?

The Australian Systems Approaches to Physical Activity (ASAPa) project is a national initiative to support a whole-of-systems approach (WSA) to the development and alignment of policies, programs and surveillance addressing physical activity (PA) at the population level. Further information about this project can be found in Appendix 6. The Australian Prevention Partnership Centre (the Prevention Centre) is the managing grant body for ASAPa, which is being undertaken by the University of Sydney Prevention Research Collaboration. The Prevention Centre is a national collaboration of researchers, policy makers and practitioners which emphasises systems approaches to prevention. Taking a WSA to PA is important, as effective action requires an integrated, system-wide approach in consultation with policy makers and stakeholders from multiple sectors.

2.2.2 What is the supporting rationale?

The aim of ASAPa in Australia has been to advance WSAs for PA from theoretical to practical applications.[1] The initial phase of the project involved: (i) the development of a conceptual map of the PA system in Australia (Figure 11); (ii) an audit and gap analysis of policies and programs nationally and across Australian state and territory jurisdictions through stakeholder engagement, desktop searches, and reviews; and (iii) a review of PA monitoring and surveillance systems in Australia. Further, it will advance more practical applications of WSA through: (iv) an update and dissemination of knowledge for best practice; (v) a WSA critical analysis to identify PA components in the prevention system in Australia to develop an integrated, cross-government framework of policy actions with appropriate monitoring and surveillance to achieve best practice; and (vi) research and stakeholder consultation to devise sustainable design specifications for a knowledge hub (K-Hub). The main purpose of a K-Hub would be to assist PA communities of practice (CoPs) in Australia to improve public health outcomes through the curation of knowledge products, sharing of better practice approaches and guidance to strengthen the development and implementation of evidence-informed policies and programs.[2,3]

A whole-of-systems map for physical activity in Australia

Taking account of feedback from national stakeholders, existing WSAs described by public health researchers and policy makers[4,5], and work related to PA (whether directly or as a discussion of obesity)[6-8], the project team developed a WSA conceptual map for PA (Figure 11).

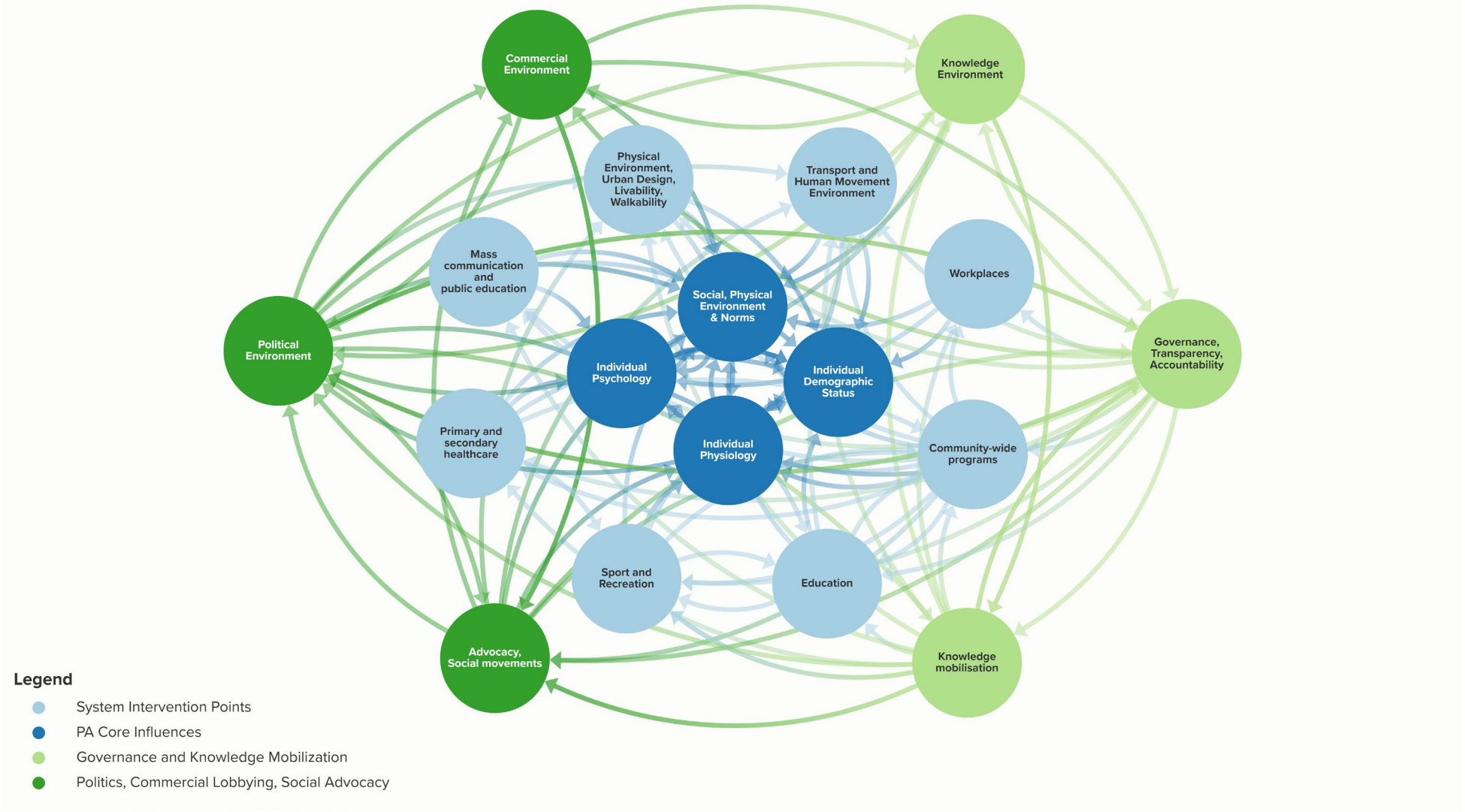

Figure 11. A whole-of-systems map for PA in Australia

Source: Bellew et al 2019.[1]

2.2.3 What are the recommendations for investment and action?

The mapping of high-level PA systems in Figure 11 includes: (a) PA influences; (b) governance, knowledge translation, and advocacy mechanisms; and (c) system intervention points for policies and programs. The mapping of PA influences is consistent with the obesity systems mapping provided by Butland and colleagues in the UK Government Foresight obesity report[8] as well as the more detailed conceptual framework developed by Rutter and colleagues in support of the WHO *Global Action Plan on Physical Activity 2018–2030* (GAPPA) (see Appendix 4 for an overview of GAPPA).[6] The inclusion of governance, translation and advocacy mechanisms in this map centred on the need to avoid four classic strategic errors which are described elsewhere in relation to obesity[9], but which are highly relevant to PA: (i) shortcomings in strategy design; (ii) investment failures; (iii) inconsistent governance and accountability; and (iv) (mis)underestimating the need for government intervention to address market failures. Our 'system intervention points' for policies and programs align with the policy actions stipulated in GAPPA[10] and elsewhere.[11,12]

Using this PA systems map, the ASAPa project completed an audit of PA policies in Australia[13], using the framework of the four overarching themes of GAPPA:

- **Active societies** which focuses on creating positive shifts in social norms and attitudes towards PA
- **Active environments** which focuses on creating and maintaining supportive spaces and places for PA
- **Active people** which focuses on creating and promoting access to opportunities and programs for PA
- **Active systems** which focuses on creating and strengthening governance and policy enablers for effective and coordinated action.

The audit found substantial evidence of policies that align with the 'active environments' objective of GAPPA but fewer examples addressing the 'active people' objective, particularly in relation to high needs groups and PA promotion through healthcare, workplace and education settings. The analysis suggested that policy governance, coordination, financing and evaluation are areas in need of development and that that there is considerable progress yet to be made in relation to the 'active system' objective of GAPPA.[13]

This map and the policy audits undertaken provide reference points for guiding comprehensive policy action as well as research in Australia, by focusing action on important areas where remedial action appears to be needed. Addressing these areas of need will be critical if Australia is to make progress towards achieving the 'active system' objective of GAPPA.[10] Refer to other chapters in Part 2 for related recommendations.

Case studies: Developing whole-of-systems approaches at the local level (Public Health England)

www.gov.uk/government/publications/whole-systems-approach-to-obesity

Public Health England has produced guides, resources and case studies to inform a WSA to obesity in England. Much of the information is relevant for PA and for the Australian context.

The video below is an example (Ctrl + Click to show).

Resources

Guidance Health matters: a whole systems approach to obesity 25 Jul 2019	Interactive links
Case study Phase 1 of a whole systems approach to obesity 2 Sept 2019	***Case study*** Phase 4 of a whole systems approach to obesity 2 Sept 2019
Case study Phase 3 of a whole systems approach to obesity 2 Sept 2019	***Case study*** Phases 5 and 6 of a whole systems approach to obesity 2 Sept 2019

2.2.4 What other strategies intersect with this area of work?

The WSA is a cross-cutting concept – it intersects (integrates) all policy or intervention domains for PA, but also highlights areas where new policy synergies may be possible (with, for example, actions promoting environmental sustainability, mitigating risks of the climate emergency, and creating liveable communities). The process may stimulate more integrated planning at subnational levels.

Some stakeholders will regard parts of a systems map as more significant than other parts, depending on where their work and engagement is located and depicted; they may also wish to use their experience to develop their particular section of the map in finer detail.

The ASAPa Project mapping of high-level (national) PA systems (Figure 11) includes influences on PA, intervention points for policies and programs, as well as advocacy, governance and knowledge translation mechanisms (items that have typically not been captured in other maps).

In some cases, that may mean that PA forms part of the solution or may feature in systems maps generated for other complex problems (e.g. environmental sustainability, air pollution, traffic congestion, health problems such as mental ill health or unhealthy weight). Others may wish to work with colleagues to develop their own regional and local maps from first principles or by drawing on elements of the national map.

The ultimate goal is to shift the PA system to a more positive state. The ASAPa project has worked to develop and promote such systems thinking and best practice approaches to cross-sectoral PA policy and implementation, and it is hoped that the participants will also find ways to extend the approach to policy contexts other than PA.

2.2.5 What are the implications for policy?

Policy makers may refer to the conceptual systems map in Figure 11 as a prompt for the range of areas that are important for developing comprehensive policy action in relation to PA – in effect, a 'discussion trigger'. Policy makers and practitioners can develop those parts of the map that are most applicable to them in more detail or develop their own maps which may draw on elements of the national map.

Researchers may find the systems map helpful in identifying priorities for research and evaluation. The process of mapping with other stakeholders provides a valuable opportunity in and of itself to explore different perspectives and better understand the interrelationships between different aspects of the system to identify opportunities for collaborative action and synergy, as well as contentious issues or areas of potential conflict. Refer to the other chapters of Part 2 for related policy implications.

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2.3 Leadership, governance and knowledge mobilisation for whole-of-systems approaches to physical activity

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2.3.1 How do 'leadership, governance and knowledge mobilisation' contribute to a more active society?

Effective policy solutions are intersectoral and beyond any one sector such as health, sport or education[1]; these effective policy solutions involve what is increasingly recognised and described as a whole-of-systems approach (WSA).[2-4] For a WSA to enable better PA policy it needs: (i) systems leadership; (ii) good governance; and (iii) effective knowledge mobilisation (KMb).

These functions are essential to avoiding conceptual and operational pitfalls which otherwise lead to flawed policy development.[5] For example, avoiding narrow or 'magic bullet' policy formulation, steering clear of imbalanced policy framing (overreliance on downstream educationally focused approaches to the neglect of upstream environmental change approaches) or thinking that any one sector has 'the answer'.

These conceptual pitfalls can lead to policy that is *unbalanced* (overemphasis on less effective strategies), *lightweight* (omission of the most effective strategies) and/or *unsustained* (insufficient resourcing for the necessary intensity and duration across the chosen policy mix).[5] In this section, we explore the three fundamental prerequisites to enable WSA – leadership, (intersectoral) governance and KMb.

2.3.2 What is the supporting rationale?

The importance of a WSA and the role of leadership, governance and KMb has been noted. It is important for key stakeholders to have an overall shared vision and basic understanding of the whole system for PA, where they (their agency) 'fit in' and which parts of the system they can and should usefully interact with. For those in leadership and/or governance roles it is essential to have such a grasp of the overall system map.

Working to achieve this shared overall vision is important to overcome the natural tendency to think and act in the 'sectoral silos' that we come from, know best, and are most comfortable in. Unless we transcend the 'sectoral silos', it is difficult to appreciate that the whole system may be greater than the sum of the parts and to act accordingly.

2.3.3 Leadership for whole-of-systems approaches

Modern *leadership development* theory holds that while some leaders may be 'born', leadership is mostly 'made' in the sense that it can be learned and nurtured.[6] Effective leadership within WSA governance and KMb is arguably built on particular forms of knowledge, attitudes, skills and values that can be developed over time.

A full consideration of the leadership development literature is beyond the scope of this publication. While we expand below on a particularly relevant framework of leadership for WSAs that employ adaptive, administrative and enabling practices, this is underpinned by insights from other relevant concepts of leadership including:

- Situational leadership[7]
- Complex systems leadership[8-14]
- Distributed leadership[15,16]

- Multidomain/identity-based leadership[17]
- Multiplex[a] network leadership.[18]

There are undoubtedly challenges involved in building support for and implementing WSA – such as creating the common sense of policy purpose needed to mobilise diverse actors, distilling the sense of urgency needed for engagement and action, and achieving policy legitimacy, coherence, coordination and durability.[19] Addressing these challenges requires intersectoral governance[20], as recognised by the WHO *Global Action Plan on Physical Activity* (GAPPA) (see Appendix 4 for an overview of GAPPA). Intersectoral governance for PA can be described as the mechanism for bridging fragmented policy responses (both policy gaps as well as policy incoherence originating in different sectors)[20] and enabling effective collaboration and alignment.[21] It also requires effective leadership which, in the context of WSA, can be described in general terms as engaging with and playing a significant role in influencing the existing system to shift it in more desirable directions.[16]

Catalysing systems change can come from anywhere in the system, not necessarily from positions of formal authority.[16] A range of leadership practices is likely to be needed that balances the administrative functions of coordinating, structuring and managing organisational and interorganisational activity, with the adaptive practices required to create the conditions for innovation, change and transformation. Murphy and her colleagues,[14] consistent with Noteboom[22], have described *Enabling leadership* as providing a bridge between these two functions of administration and adaptation, allowing the emergence of new ideas and approaches and facilitating their integration into formal and coordinated networks and action (Figure 12).

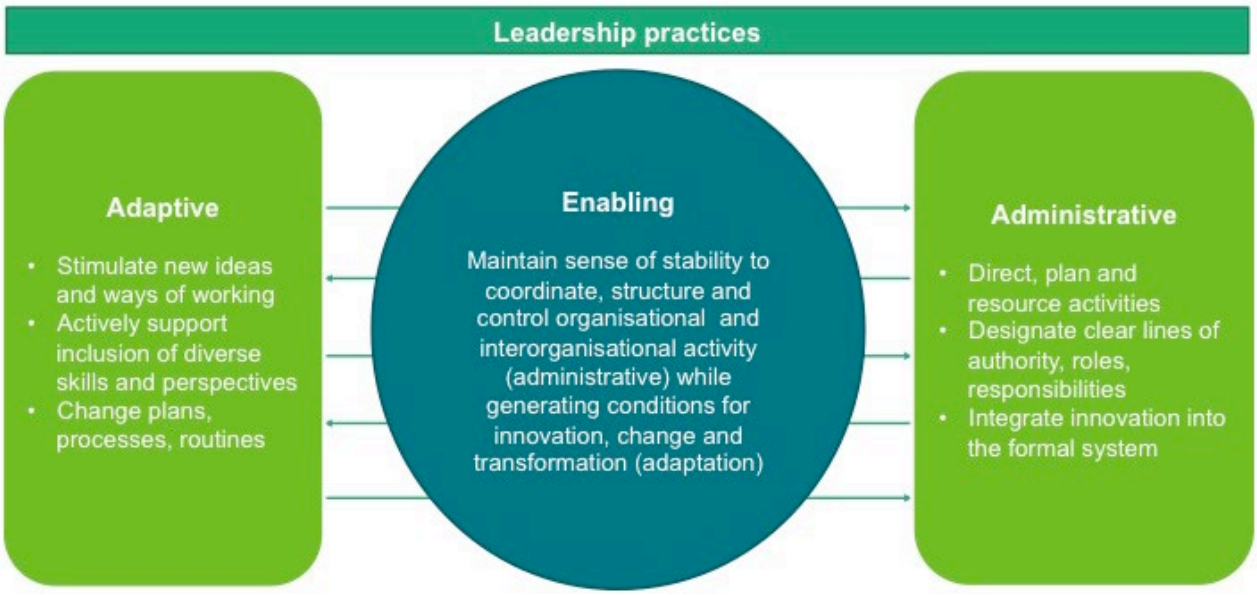

Figure 12. Leadership practices for systems change

Source: Adapted from Murphy 2017[14] and Nooteboom 2013[22].

[a] 'Multiplex' networks are those where both formal and informal ties exist between actors simultaneously.

2.3.4 Governance for whole-of-systems approaches

Insights into the role of leadership, governance and coordination for WSA to PA policy may be drawn from the literature on leadership[7-13,16-18,20,23-25], systems and governance[3,10,11,26-30], health in all policies (HiAP)[31,32], intersectoral approaches in public health[33-42], and KMb and translation through a 'communities of practice' approach[3,27,36,43-49].

Governance is achieved through a combination of formal and informal processes and structures and has been defined as:

> *"the sum of the many ways individuals and institutions, public and private, manage the connections of their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and cooperative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions either have agreed to or perceive to be in their interest."*[52]

Good governance then, takes these general notions of process a step further and may be defined as decision making, policy creation and rule enforcement that is non-discriminatory, participatory, has integrity, is transparent, efficient (not wasteful) and is subject to accountability (if someone does the wrong thing). Criteria for effective governance have been described by researchers in relation to obesity policy; these high-level criteria are readily applicable to PA and are shown in Table 7.[5]

Table 7. Criteria for effective policy governance

Criteria for effective policy governance, coordination and accountability
Incorporation of strategic advice from expert advisors
Partnership with multiple stakeholders inside and outside government
Robust surveillance and evaluation mechanisms
Comprehensive, high level, long term strategy
Cabinet level support for government leadership
Allocation of sufficient resources
Long term vision and goals as well as interim measures
Coordination within and outside government to synergise cross-cutting policies and link with local government
Use of evidence and building on best practice
Transparency and accountability for use of public funds; stewardship to protect health from conflicts of interest

Formal structures and processes may involve formalising an overarching policy that sets out a clear goal and purpose for intersectoral collaboration on PA; appointing leaders with the necessary boundary-spanning and relational skills for intersectoral collaboration; setting up a network or community of practice to facilitate trusted interaction and coordinate action; and developing robust monitoring and evaluation systems with agreed data sharing protocols.[29,41,51]

However, in complex, heterarchical systems (as opposed to hierarchical ones) there may be no overarching policy at all. The process of coordination and negotiation is a continual one, not something that is completed at the time

the 'policy' is set. Cumming[52] argues complex systems exhibit a continuum of structure that ranges from network to hierarchy. Instead of a clear-cut distinction between two fundamentally different kinds of complex system, what we see in reality is a continuum of system architecture in at least two dimensions (Figure 13).

Just as important are the informal processes and structures for fostering relational factors including high levels of trust and goodwill among partners; this requires people getting to know each other, and demonstrating competency, good intentions and follow through.[29,51]

Structural arrangements should allow flexibility for adaptive leadership to occur (i.e. for new conversations to take place, new relationships to be formed and a responsive approach to partnership working), which can be enabled by increasing the number of opportunities and mechanisms for KMb.[29,53]

Broadly, this can be achieved by establishing and brokering relationships, disseminating and synthesising knowledge, and facilitating interactive learning and co-production of research.[54]

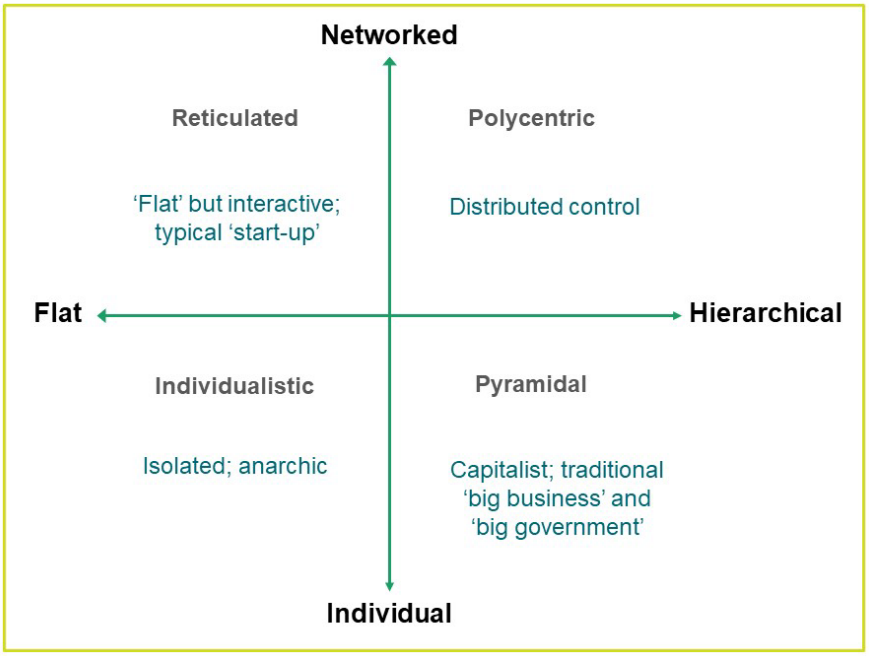

Figure 13. Complex systems: Four basic types of heterarchy

Source: Cummings 2016.[52]

Some practical insights derived from the complexity leadership literature are provided in Table 8 about the types of leadership functions and examples of associated practices that may be relevant and useful for WSA, noting that they are interdependent rather than mutually exclusive of each other.

Table 8. Leadership functions and examples of associated practices for WSAs

Leadership functions	Examples of associated practices
Administrative	• Develop, communicate and monitor the realisation of a shared vision for action on PA • Direct, plan and provide resources for implementation of PA policies and programs and for surveillance of the PA system • Create clear lines of authority, roles and responsibilities for PA-relevant actions • Integrate and embed innovation into the formal system for PA
Adaptive	• Allow for and stimulate a variety of strategies, options and approaches for PA • Actively support the inclusion of diverse skills and perspectives (boundary spanning) in addressing PA • Mobilise actors to develop solutions for PA by organising linkages and connections between people, domains and organisations through formal and informal networks • Search for new possibilities to address PA within existing frameworks
Enabling	• Reflect on cross-organisational relationships with other possible leaders to identify ways of enabling adaptive leadership to emerge across organisations • Invest in personal relationships with counterparts to share ideas about possible desirable outcomes and need for adaptive leadership strategies, and to take mutually reinforcing steps towards joint goals. Build trust and legitimacy • Coordinate and allocate resources that support creative, learning and adaptive leadership behaviours and protect against external politics or top down directives that may inhibit innovation in relation to PA • Use sensemaking/framing to generate support for new ideas or ways of working in relation to PA to facilitate their integration into the formal system

Source: Based on Fawkes 2012[16], Nooteboom 2013[22], Murphy 2017[14], Uhl-Bien 2007.[13]

Through a combination of leadership, governance and KMb processes and structures, impactful progress on PA can be expected to be made by producing first, second and third order effects – first order effects being those that are initially apparent and the result of deliberate action; second order effects being those that emerge when partnership activities are well underway; and third order effects being those that occur over time.[51]

Effective governance can help ensure the durability and resilience of intersectoral collaboration despite changes in political circumstances or failure to achieve expected outcomes, so that these second and third order effects are more likely to eventuate and produce positive shifts in the PA system (Figure 14).

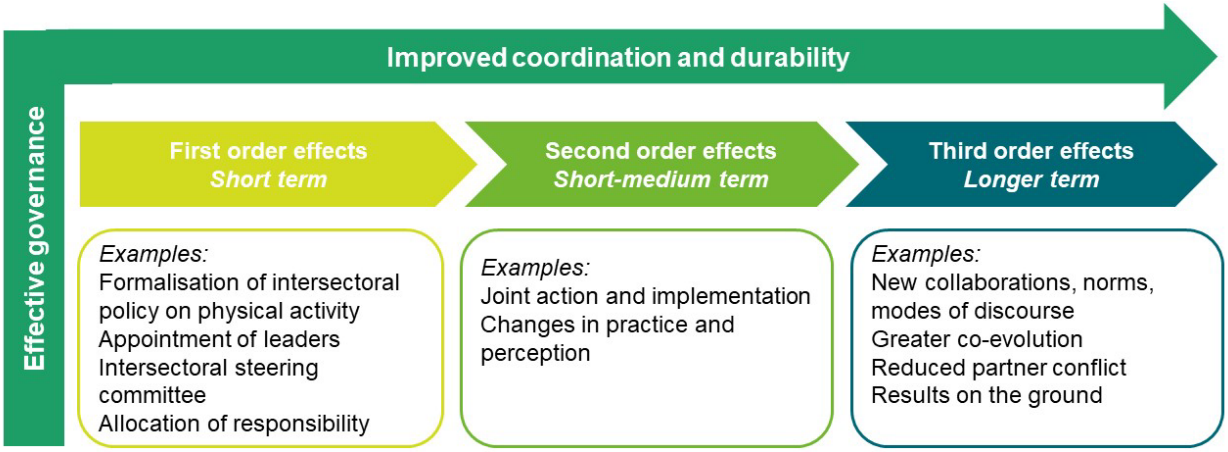

Figure 14. The role of governance in improving coordination and durability of WSAs for sustainability of effects

Source: Based on Bryson et al 2006.[51]

2.3.5 Knowledge mobilisation for whole-of-systems approaches

Knowledge mobilisation refers to the processes of generating, sharing and using knowledge to develop and improve policy and practice and produce useful research.[54] 'Knowledge' broadly encompasses scientific/factual knowledge (research findings, population data and statistics, evaluation data), technical (skills, experience, expertise), and practical (professional judgements, values, beliefs, intuition), and is generated by any stakeholder in the PA system, including researchers, advocates, frontline practitioners, and policy makers (Figure 15).[54]

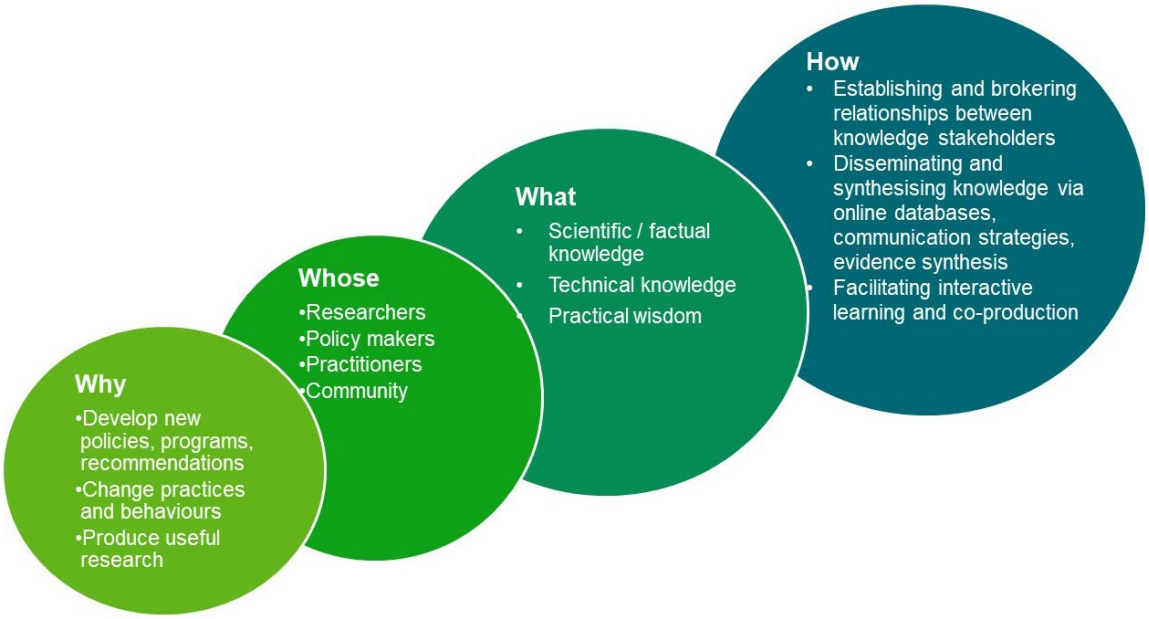

Figure 15. A framework for understanding knowledge mobilisation

Source: Adapted from Ward et al 2017.[12]

The important functions of KMb are illustrated in Figure 16, with examples of how it can contribute towards WSAs.

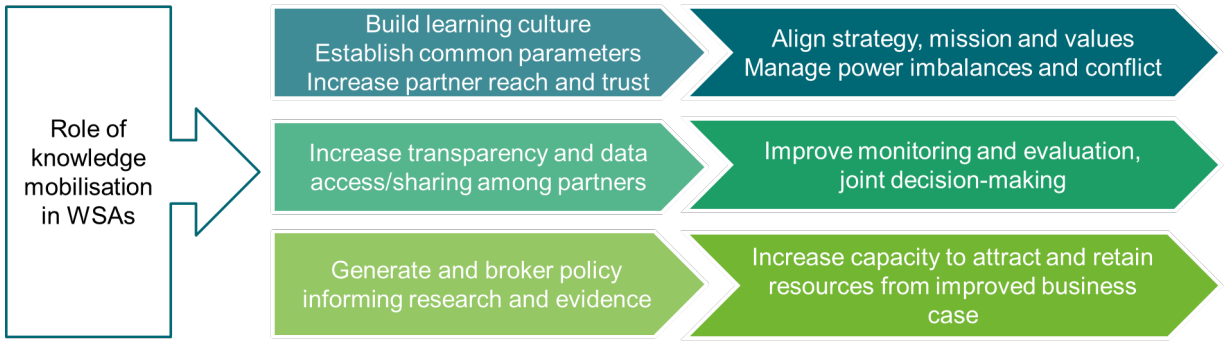

Figure 16. Role of knowledge mobilisation in whole-of-systems approaches

Source: Based on Willis et al 2017[53], de Leeuw 2017[28].

2.3.6 What other strategies intersect with governance, leadership and knowledge mobilisation?

Governance, leadership and KMb provide the underlying structures, processes and mechanisms for facilitating and maintaining coordinated intersectoral action on PA and generating new connections, ideas and ways of working that can create positive shifts in the system for PA. They therefore intersect with every part of the PA system including all eight domains for policy action, and system supports including surveillance systems (refer to Chapter 5). The strategic principles for capacity building to advance a WSA to PA are discussed in Chapter 2.4.

2.3.7 What are the implications for policy?

Both formal and informal processes and structures are needed to support effective governance and knowledge mobilisation in WSAs and enable coordinated action and effective collaboration across diverse sectors and jurisdictions. The importance of relational factors such as trust and goodwill should not be understated, as these influence the level of partner commitment, ability to manage power imbalances and conflict, interactions between partners, and willingness of partners to contribute and share knowledge to promote a learning culture and improve joint decision making. However, institutions themselves need to be strong enough to ensure that cooperation, coordination and resource investment continue even when there is change of individuals and personnel. Processes themselves need to be legitimate (seen as fair, right and proper) so that there is less reliance on interpersonal relationships – particularly over time.

Policy makers may need to consider whether they need to build capacity at an individual, community, organisational or system level to support good governance and KMb in WSAs to PA (Chapter 2.4). Leadership for governance and KMb in WSAs can more usefully be conceptualised as *a property of the system* than the attributes of a person[16]; the notion of distributed leadership[25] is also helpful. An implication here is that if leadership in WSAs is distributed and complex, then the learning and development to nurture this leadership may also need to be purposefully embedded/distributed and made explicit to the system actors, and involve periods of reflection on how leadership, governance and KMb is functioning across the system.

- **For a WSA to enable better PA policy there are three key requirements:**
  - **(i) Systems leadership**
  - **(ii) Good governance**
  - **(iii) Effective KMb**
- **Leadership requirements for WSAs are different to those needed for single or even multisectoral approaches. This section draws on five leadership theories to describe the Enabling style of leadership for WSAs**
- **KMb can work in WSAs to**
  - **(i) Build a learning culture**
  - **(ii) Increase transparency and sharing**
  - **(iii) Stimulate evidence translation for better policy and practice.**

Further resources and examples

Refer to the links listed under 'Governance, leadership and knowledge mobilisation' in Appendix 5 for other useful resources and guidance.

Refer to Appendix 3 for some illustrative examples of policies, programs and other initiatives in Australia that relate to this domain (particularly those described under GAPPA 4.1, 4.4).

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2.4 Strategic principles and capacity building for a whole-of-systems approaches to physical activity

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2.4.1 How does capacity building for a whole-of-systems approach contribute to a more active society?

Effective action for the creation of a more active society demands the development and implementation of integrated, comprehensive, system-wide approaches[1] in consultation with policy makers and stakeholders from multiple sectors and communities.[2] Using a WSA conceptual approach is perhaps more helpful than alternatives because it accounts for changing contexts, current and emerging key actors and their interactions over time, deepening our understanding of the system, of 'how things work' and where and how to intervene to improve the desired outcomes.[3-5] WSAs to PA (and to public health more broadly) are a relatively recent development, sitting more in the theoretical than in the applied domain of practice so that the emergence of empirical evidence on the usefulness of WSA *per se* is in its infancy, as noted in the 2019 systematic review by Bagnall[2] (Table 9).

Table 9. Features of a whole-of-systems approach to physical activity

Feature	Details
Identifying a system	Explicit recognition that the PA system consists of interacting, self-regulating and evolving elements. Recognises that a wide range of bodies including those that do not have any overt interest or objectives in relation to PA, may have a role to play, meaning the boundaries of the system may be broad
Capacity building	Explicitly aims to support communities and organisations within the system
Creativity and innovation	Mechanisms to support and encourage local creativity and/or innovation to address PA problems
Relationships	Methods of working and specific activities to develop and maintain effective relationships within and between organisations
Engagement	Clear methods to enhance the ability of people, organisations and sectors to engage community members in the development and delivery of programs
Communication	Mechanisms to support communication between actors and organisations within the system
Embedded action and policies	Practices explicitly set out for public health and social improvement within organisations within the system
Robust and sustainable	Clear strategies to resource existing and new projects and staff
Facilitative leadership	Strong strategic support and appropriate resourcing developed at all levels
Monitoring and evaluation	Well-articulated methods for providing ongoing feedback into the system, to drive change to enhance effectiveness and acceptability

Source: Adapted from Bagnall et al.[2]

By contrast, WSAs have been used in other fields for much longer so we can also draw on the non-health WSA literature in thinking about strategic principles and capacity building. Capacity building is a term used for the familiar concepts of community and workforce development. Capacity building taps into existing abilities of: (i) individuals; (ii) communities; (iii) organisations; or (iv) systems, to increase involvement, decision making and ownership of issues (Table 10).[6]

Table 10. Potential outcomes of capacity building

The outcomes of capacity building may relate to:	
Individual	Participation levels, skill (leadership, problem solving, negotiation), knowledge, values, empowerment, increased engagement with (or connection to) the community, and desired behaviour changes
Community	Changes in membership, technical abilities and interpersonal skills (confidence, communication) of individuals, collective knowledge, planning and evaluation skills, and resource management (financial or non-financial)
Organisational	Changes in decision making, organisational policies, resource allocation, partnerships, collective attitudes and values
Systemic	Changes in interorganisational planning and/or collaboration, new legislation, resource allocation, values, cultural norms, societal values

Source: VicHealth 2012.[6]

2.4.2 What evidence can inform capacity building for whole-of-systems approaches to physical activity?

As noted above, key features of a systems approach to public health problems (such as physical inactivity) have been proposed in the systematic review by Bagnall[2], adapted from a UK National Institute for Health and Care Excellence (NICE) evidence review[7], as well as a guide to supporting local agencies with WSAs.[8] Evidence for the effectiveness of WSAs is emergent; as might be expected there are various approaches to the articulation of principles and activities which may guide capacity building to underpin their development. Reich and colleagues (Flagship Program) offer 'strategic design principles'[9], Bagnall and colleagues set out the 'features of a systems approach'[2], while the framework developed by Foster-Fishman and colleagues describes essential components for understanding and transforming systems.[10] These approaches are described in more detail in the following paragraphs.

Lessons from 20 years of capacity building for health systems thinking have been reported by Reich and colleagues based on a study of the World Bank/Harvard School of Public Health 'Flagship' program.[9] While the Flagship program focused mostly on the health sector, the review identified generic principles which we have adapted for use in systems approaches to the promotion of PA (Table 11).

Table 11. Capacity building for a whole-of-systems approach – strategic design principles

Design principle	Practical application	Further information and examples
Common priority themes	Find and focus on the common themes across heterogenous needs	• The communication domain and PA (see Chapter 3.5) • Addressing inequity in PA participation (see Chapter 4)
Shared frames of reference	Provide analytical frameworks that create a common language for teaching and learning	• Whole-of-systems map for PA (see Chapters 2.1 and 2.2) • Policy domains for action on PA (see Part 3)
Action oriented	Get the right balance between systems theory and operational practice	6-step process model of implementing a WSA for PA (see Figure 18 in this Chapter)
Participatory and interactive	Emphasise Adult Learning approaches	• Integrated model of Adult Learning for PA - Ascertain, share existing knowledge and experience - Reflect, observe to develop new PA concepts - Articulate new concepts and put into practice - Reflect on, share experience of implementation of PA interventions and lessons learned
Evaluation and continuous improvement	Evaluate to ensure the responsiveness and relevance of capacity building activities	• Process evaluation - Were the teaching and learning experiences delivered as planned? Well received by the participants? Relevant? • Impact evaluation - Did the teaching and learning influence PA policy and practice for the better?

Source: Reich et al.[9]

Foster-Fishman and colleagues have provided a useful framework (Table 12) for understanding and changing organisational and community systems[10] which has been applied in Australia by Allender and colleagues.[11]

Table 12. Foster-Fishman framework – essential components of transformative systems change

Bounding the system	Understanding system parts as root causes	Assessing system interactions	Identifying levers for change
• Problem definition • Identification of the levels, niches, organisations and actors relevant to the problem	• System norms • System resources • System regulations • System operations	• Reinforcing and balancing interdependencies • System feedback and self-regulation • Interaction delays	**Identifying parts to leverage for change** • Exerts or could exert cross-level influences • Directs system behaviour • Feasible to change **Identifying interactions and patters to leverage for change** • System differences that create niches compatible with systems change goals • Long standing patterns that support or hinder change goals • Gaps in system feedback mechanisms • Cross-level/sector connections that are needed
Examples for PA: • Compile a WSA map of PA for a specific local government area • Complete a PA stakeholder mapping and analysis • Identify 'community ambassadors' for PA	**Examples for PA:** • Audit of community assets for PA • Data on knowledge and attitudes of management stakeholders across sectors • Mapping of potential policy co-benefits	**Examples for PA:** • Data report on the effects of speed zones and traffic calming on pedestrian and cycling PA • Citizen science data on street lighting, perceived safety and likelihood of PA participation	**Examples for PA:** • Add new section to existing walkway to create a 'loop' and additional connections • Install new speed bumps and speed feedback monitors near local park • Modify maps on display for city trains and light rail to show walking distance and time between stops

Source: Foster-Fishman et al.[10]

2.4.3 What works to build capacity for whole-of-systems approaches to physical activity?

Towards infrastructure and program specification

Use of Adult Learning Theory is a core design principle in Teaching and Learning for WSAs

Taylor and Hamdy have provided an integrated model across Adult Learning (AL) theories (Figure 17).[12] **Dissonance** is where the learner's existing knowledge is challenged and found to be incomplete. In '**Refinement**', the learner seeks possible solutions to a problem ('**Elaboration**'), and through completing tasks, research, reflection and discussion refines newly acquired information into *new concepts*. In '**Organisation**', the learner restructures their previous ideas to account for the new information acquired through: (a) *reflection in action* (test, re-test); and/or (b) *organisation of the information into* **schema(ta)**. In the crucial '**Feedback**' phase, the learner articulates their new acquired knowledge and tests it against what their stakeholder peers believe. Feedback either reinforces their schema(ta) or prompts reconsideration/revision in light of the new information.

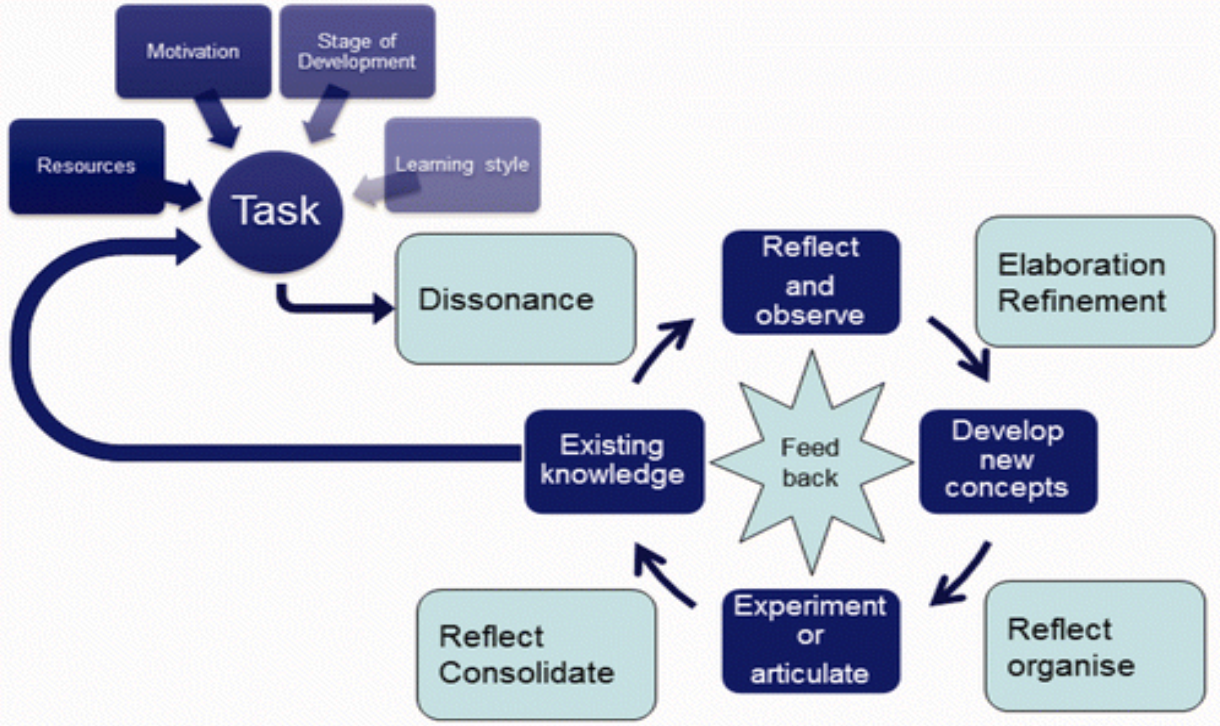

Figure 17. An integrated model of Adult Learning

Source: Taylor and Hamdy 2013.[12]

Using an AL approach is a key design principle (Table 13). Taylor and Hamdy have developed an integrated model of AL (Figure 17) and a practice guide.[12] We can now bring together evidence on the features of a systems approach in public health (Table 9), design principles for WSA capacity building (Table 11), an integrated model for AL (Figure 17), relevant new evidence from Public Health England and the National Institute for Health and Care Excellence[8,13], and research findings from Australia.[11,14-17]

For our purposes a *competency* is a general and broad description of the desired knowledge, applicable skills or behaviours from a learning experience that enable people to perform a given role in a WSA to public health – more specifically a WSA to PA.

We propose a taxonomy of competency domains and learning outcomes for WSAs (Table 13). Nine **Competency Domains**[a] are set out with corresponding examples of **Learning Outcomes,** adapted from or informed by Public Health England[8,13], Allender[11], Nau[17], Bellew[16] and Roberts.[18] While we have identified what we regard as very important learning outcomes, we are not suggesting that the listed set of examples is comprehensive or definitive.

[a] Competency domains are based on the key system behaviours identified by Public Health England (2019).

Table 13. A taxonomy of competency domains with examples of learning outcomes for whole-of-systems approaches to physical activity

Competency domains	Learning outcomes
Innovation culture Embedding policies and actions	- Demonstrate responsibility and sustained support for the design and delivery of a local WSA to PA - Articulate a vision for a WSA and describe how own role could fit within the local systems approach - Learn about differing stakeholder viewpoints and priorities and describe the interconnectedness across the breadth of a stakeholder network
Shared aspirations Building effective relationships; developed shared goals; finding common operational ground	- Create an engaging, open and honest conversation within stakeholder network(s) - Develop a clear and shared aspirational vision with stakeholders on what the WSA is and trying to achieve - Develop a common conceptual framework to capture co-benefits beyond health, in agreement with sectoral community stakeholders
Whole-of-systems learning Capacity building, knowledge mobilisation, evaluating complex adaptive systems	- Communicate the concepts of and effective approaches to Communities of Practice (CoP) and knowledge mobilisation; explain these in terms of the whole system - Promote a culture and environment that encourages reflection and continuous learning at the individual and whole-of-system levels - Share insights, learn from other stakeholders, communicate efficiently what is happening locally and other information in support of the shared vision - Create structured opportunities to foster communication and shared learning about methods of practice, experience and outcomes of implementation across stakeholder network(s) and CoPs - Seek to explain changes in a range of core system features including leadership, culture, depth and breadth of connections as well as service delivery
Collective action Stakeholder analysis; Coalition building	- Communicate key concepts and relevant approaches to stakeholder analysis and coalition building - Learn about the co-benefits of PA beyond health, as perceived by sectoral and community stakeholders - Identify alignment between current and possible future actions, at differing levels, across sectors using whole-of-systems mapping and intelligence - Influence and facilitate stakeholders, across the system, to take responsibility and own or co-own actions
Communication mechanisms Advocacy, communication and social marketing	- Communicate concepts and best practices in advocacy, communication and social marketing (ACSM) - Create effective approaches to ACSM. Share insights and data to support system-wide action

Competency domains	Learning outcomes
Governance structures Governance for a WSA; sustainability strategies; monitoring and evaluation of WSA	- Communicate the concept of governance for whole systems; explain the function of governance in terms of the whole system - Co-design strategies and processes with stakeholders and communities, to collect, monitor and make sense of information to help evaluate progress - Understand that evaluation considers the cumulative impact of a wide range of inputs rather than focusing on a set of discrete outcomes - Design approaches to secure and maintain stakeholder accountability, including (as required) building incrementally on what may already be in place and working well - Learn about sustainability strategies such as Whelan et al, Hailemariam et al
Community engagement Engagement of sectors, organisations, people; building a common language	- Meaningfully involve key stakeholders in every aspect of whole systems work to benefit from their expertise in understanding what communities want, their perception of the relevant community assets and how efforts to intervene and drive improvement might be made more effective - Communicate a process model showing phases of implementation for a WSA (e.g. Public Health England 6-Step model) - Develop an understanding of the variety of nomenclature used by sectoral stakeholders to describe their strategies, activities and success measures
Systems thinking A joined up, shared view of how things work	- Communicate the concept of a continuum of systems thinking approaches; contrast scoping/conceptual mapping with quantitative dynamic modelling e.g. Bellew, Roberts - Co-design a WSA conceptually to enable all stakeholders to share common ground and purpose - Build understanding of fundamental system parts as potential root causes of the public health problem (e.g. physical inactivity) - Adopt a mindset of seeking 'plausibility' not 'causality' with a view to increasing our confidence that action has had an impact - Recognise that no single action in a system will be responsible for any observed changes in our desired outcomes - Identify system parts to leverage for change - Stimulate and lead discussion on delivering collective and aligned system-change strategies
Mindset Leadership for WSAs	- Learn about current concepts of Shared Leadership and Complexity Leadership - Seek first to understand the different perspectives and priorities of those working across the system, recognising what is currently working as well as exploring new behaviours, thinking and action - Create a consensus towards collective gain rather than individual benefit - Lead by example, setting aside personal and institutional objectives and agendas. Look for opportunities to collectively learn rather than seeking to take credit for success - Approach change with optimism, empathy and humility and a willingness to question assumptions, behaviours and current ways of working - Commit to the long-term outcomes

2.4.4 What are the recommendations for investment and action?

In Chapter 2.1 we described WSAs as being at the heart of the WHO *Global Action Plan on Physical Activity* (GAPPA) – Objective 4 of GAPPA is "*create active systems*."[19]

In this section we have defined investment guidance for capacity building for a WSA to PA in terms of: (i) design principles; (ii) essential components of transformative systems change; and (iii) competency domains and learning outcomes (examples, not an exhaustive compendium).

In terms of recommended investments and actions, we suggest developing tender specifications/requests for proposals/learning experiences consistent with the following:

1. Clarify which of the four levels of capacity building are to be addressed in the proposed actions to increase PA
2. Incorporate the five Strategic Design Principles (Table 11) as the overarching approach to PA planning
3. Use the Foster-Fishman Framework (Table 12) as an overview of the essential components of whole system change that teaching and learning experiences should be designed to address
4. Refer to the Taxonomy of Competency Domains and Learning Outcomes for WSAs (Table 13) when designing teaching and learning experience and in thinking about capacity building opportunities whether planned or incidental-by-design.

WSA capacity building (CB) may be framed at four levels:

- **INDIVIDUAL: Participation levels, skills (leadership, problem-solving, negotiation), knowledge, values, empowerment, increased engagement with (or connection to) the desired behaviour changes**
- **COMMUNITY: Changes in membership, technical abilities, and interpersonal skills (confidence, communication) of individuals, collective knowledge, planning and evaluation skills, and resource management (financial or non-financial)**
- **ORGANISATION: Changes in decision making, organisational policies, resource allocation, partnerships, collective attitudes and values**
- **SYSTEM: Changes in inter-organisational planning and/or collaboration, new legislation, resource allocation, values, cultural norms, societal values.**

Policy makers and development officers should:

- **Clarify the applicable CB level(s)**
- **Incorporate the recommended five strategic design principles**
- **Consider using Foster-Fishman as an overarching framework**
- **Refer to the Taxonomy of Competency Domains and Learning Outcomes when designing learning experiences in WSA.**

2.4.5 What other strategies intersect with capacity building for whole-of-systems approaches?

Capacity building adds to and strengthens the abilities of: (i) individuals; (ii) communities; (iii) organisations; and (iv) whole systems, to increase involvement, decision making and ownership for WSA. Capacity building for WSAs is at the very heart of WSA to PA. In that sense, this strategy potentially intersects with all and any part of the system. Key steps are to clarify which of the four levels of capacity building are to be addressed, which whole-of-system intervention points are to be the focus and which competency domains and learning outcomes are a priority. The six-step implementation process model developed by Public Health England[8] depicts a process comprising six phases of implementation; however, the **capacity requirements to deliver these steps are not shown**. The models, frameworks, competency domains and learning outcomes identified in this section can be thought of as sitting behind that process model and are what will underpin successful implementation. A PA-specific model developed by Copeland and colleagues is also available as a reference point (Figure 19).[20]

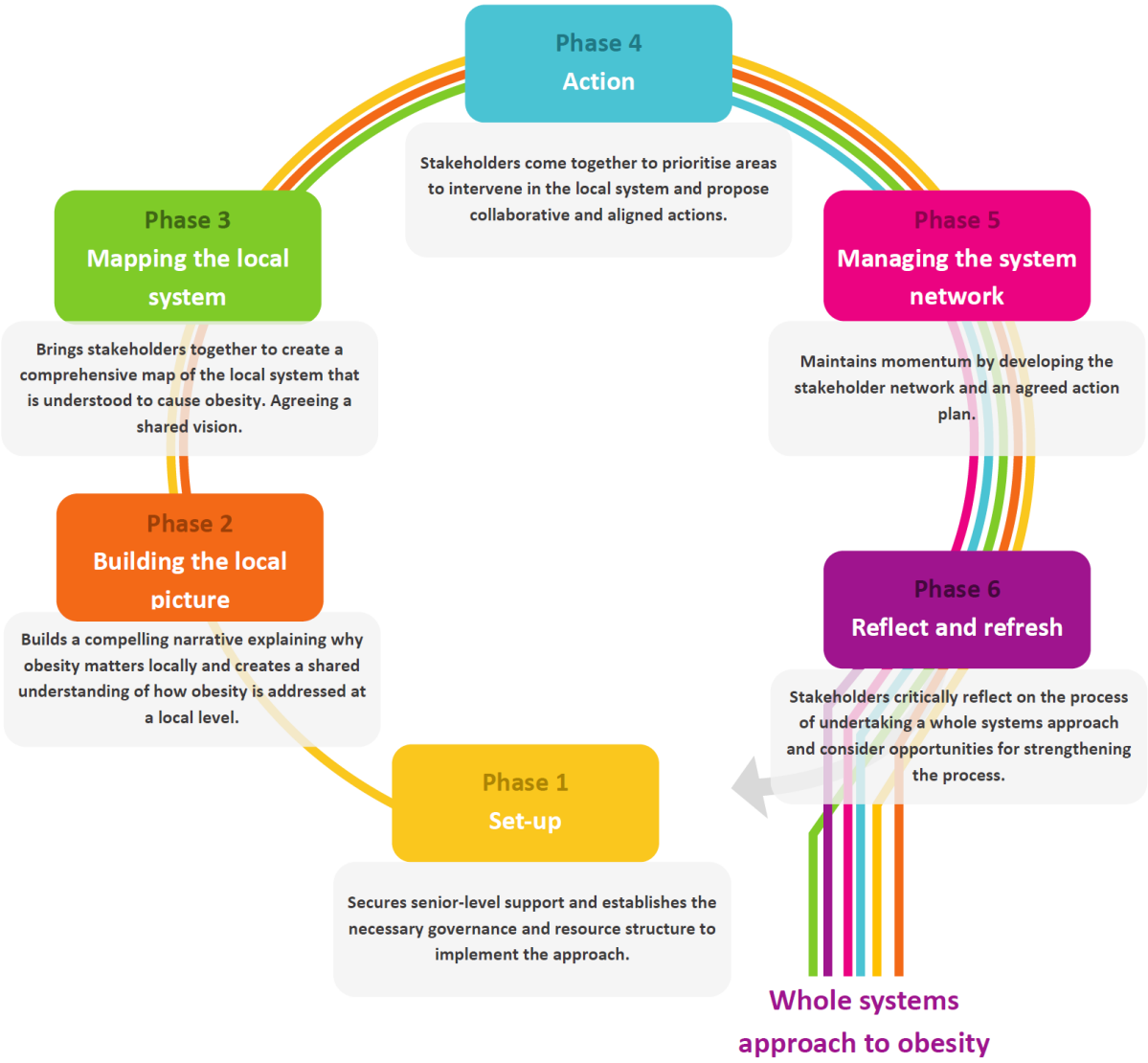

Figure 18. A six-step process model of implementing a whole-of-systems approach (the example here is for obesity but is equally applicable to PA)

Source: Public Health England.[8]

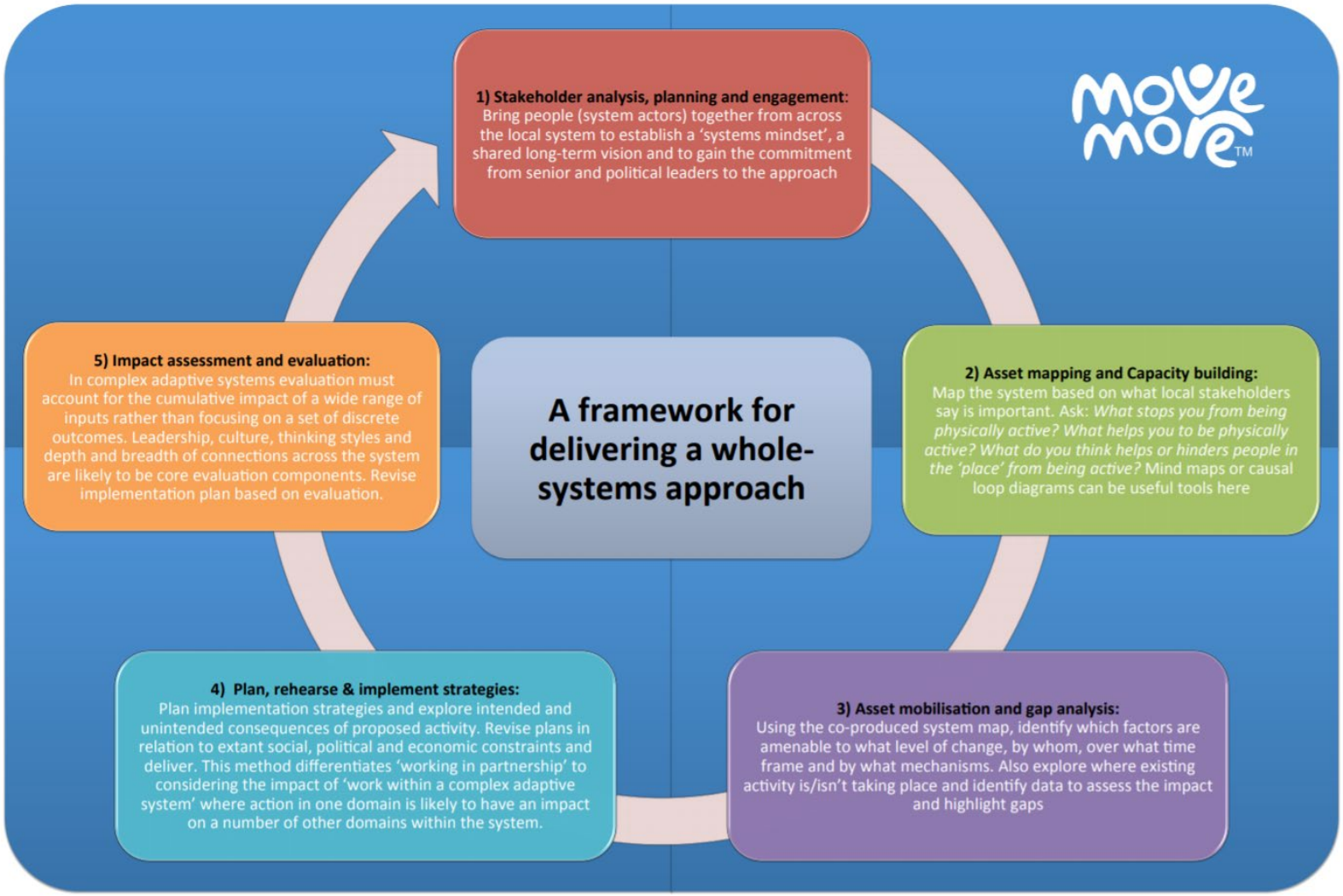

Figure 19. Five stages of a whole-of-systems approach to increasing physical activity in Sheffield, UK

Source: Copeland et al 2018.[20]

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3. Policy domains for action

3.1 The education domain and physical activity

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3.1.1 How does this domain contribute to a more active society?

The education domain refers to preschool, primary and secondary school, and tertiary phases of education including vocational and adult education. In Australia, education at preschool, primary, secondary and tertiary phases are widely accessed by the general population. Educational attainment is associated with greater physical activity (PA) participation, improved socioeconomic status and better health and wellbeing. In 2017, 87% of preschool-aged children attended a preschool or preschool program; and 58% of 2–3 year old children and 45% of four-year-old children attended formal childcare.[1] Formal education starts around age five (Kindergarten/Prep) in Australia and is compulsory until completion of Year 10 (age 15–16). Young people must then participate in full-time education, employment or training (or a combination) until age 17.[2]

During formal education years, almost all Australian children are enrolled in school. During adolescence for females and early adulthood for males, the proportion of the population participating in education declines sharply with age, although nearly one in five (19%) people aged 15 to 64 years in Australia are enrolled in formal study annually.[3] Tertiary education is most common among those aged 17–21 years old. Each of these education phases has the potential to make an important contribution to building people's knowledge, understanding, and appreciation for the multiple benefits of regular PA.

The core function of the education domain is to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all[4] but the importance of educational settings for public health interventions is widely recognised; they allow targeted interventions to influence a large subpopulation for a substantial proportion of time. There is some evidence that exposure to PA opportunities for children and adolescents within education settings to establish active behaviours, tracks into later life.[5-7] There is a need to increase efforts to ensure greater empowerment and inclusive participation for young people with special educational needs[8], physical disabilities[9], and to address inequities in participation associated with gender, socioeconomic or cultural/linguistic background.[10]

Physical education (PE) and PA are described in the United Nations Sustainable Development Goals (SDG 4.1) as "*fundamental rights for all*" and, should be integrated throughout the education domain.[11] Quality PE which ensures inclusive access for all and supportive environments in educational settings are essential to establish physical and health literacy for long-lasting healthy, active lifestyles; however PE alone is not sufficient nor solely responsible for ensuring improvements in physical literacy.[11,12,13] In Australia, PA policies (for government schools) generally recommend at least 120 minutes per week of scheduled PE classes and organised school sport activities.[14] Few jurisdictions meet the Active Healthy Kids Australia 2016 recommendation of at least 150 minutes of scheduled PA during school time each week[14], which would contribute just over one-third towards the total amount recommended for children under the Australian guidelines (the remaining amount may be gained through other activities and settings e.g. active transport to and from school, active play at home, sport participation in community settings). However, these school policies are generally not mandated across all year levels or monitored widely in Australia.[15] The Australian Curriculum for Health and Physical Education is described clearly on the website maintained by the Australian Curriculum, Assessment and Reporting Authority (see here).[16]

PA can make a significant contribution to achieving the objectives of education providers.[11] There is strong evidence that PA participation during structured breaks, such as recess and lunch, and through PE and an active curriculum improves students' concentration and academic performance, and also improves health outcomes.[17-19] PA participation has further been shown to increase student engagement in school, reduce truancy, as well as develop social skills such as team work and leadership among students.[20,21] Ensuring structured and unstructured PA is promoted, accessible and supported throughout all educational phases is important to optimise the mutual lifelong physical, social, psychosocial and cognitive benefits of being active throughout the life course.[11]

School-based AT strategies provide additional opportunities within the education setting for increasing PA particularly among primary school children.[22] To realise the potential for increasing PA of those attending educational settings, effective policies and programs which can be readily and sustainably adopted by education providers need to be implemented. Effective policies and programs are noted in research reports[23-26], but evidence for implementation of effective and cost-effective interventions at scale is less readily available.[27]

3.1.2 What is the supporting evidence?

A preliminary note on surveillance

There is an overarching urgent need for Australia to have standardised surveillance for PA, across the life course.

AIHW notes that the most recent data available on PA among children and adolescents is the ABS 2011–12 National Nutrition and Physical Activity Survey.[28] The establishment of a consistent national approach to regular measuring of children's height and weight, fundamental movement skills (FMS) and PA at key stages of primary and secondary schools, with 'opt-out' (passive) consent is overdue.

For adults, Australian states and territories undertake Computer Assisted Telephone Interview (CATI) surveys with nutrition and PA components; they are compromised by inconsistent data collection methodology and the fact that data are self-reported and limited in scope.

AusPlay (a sport participation survey) provides some valuable participation data but does not address these issues or provide long-term trends as this survey is not contiguous or comparable with the previous sport sector driven ERASS survey series 2001-2009, the earlier PSM surveys to 2000 or DASETT surveys in the late 1980s.

See further Chapter 1.2 (participation rates, trends and social disparities) and Chapter 5 (surveillance).

Promising interventions which promote PA in preschool, primary, secondary and tertiary education settings involve developing the wide variety of skills in students which are known to be required for them to participate fully and experience the range of benefits that PA has to offer.[13]

The concept of physical literacy

In 2019, the concept of physical literacy was defined as "*Lifelong holistic learning acquired and applied in movement and physical activity contexts*" by experts in Australia.[13] Physical literacy and the associated Australian Physical Literacy Standards Framework provide a structure and guide for a range of stakeholders to monitor and inform programs to promote PA in educational and other domains. Enhancing the physical, psychological, social and cognitive domains of physical literacy[13] (Figure 20) is likely to lead to increased knowledge, understanding, confidence, skills and attitudes which facilitate participation in PA through the life course. However, confirmation through further research studies is needed.[10,29,30]

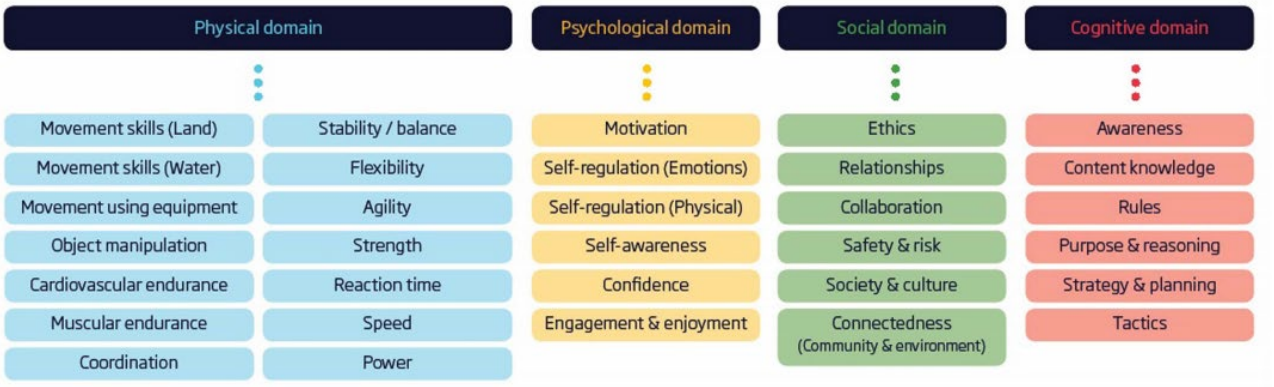


Figure 20. Physical literacy – a vocabulary of movement for life

Source: Keegan et al 2019.[18]

The concept of the Health Promoting School

To tackle chronic diseases, the WHO has designated a set of strategies in education as 'recommended'. To be consistent with this designation requires implementation of a whole-of-school approach that includes quality PE, availability of adequate facilities and programs to support PA for *all* children.[10,25] A whole-of-school approach can be adapted to all settings within the education domain. The WHO Health Promoting Schools Framework is one way to establish a whole-of-school approach.

A ***Health Promoting School*** is one that:[31]

- Fosters health and learning with all the measures at its disposal
- Engages health and education officials, teachers, teachers' unions, students, parents, health providers and community leaders in efforts to make the school a healthy place
- Strives to provide a healthy environment, school health education, and school health services along with school/community projects and outreach, health promotion programs for staff, nutrition and food safety programmes, opportunities for PE and recreation, and programs for counselling, social support and mental health promotion
- Implements policies and practices that respect an individual's wellbeing and dignity, provides multiple opportunities for success, and acknowledges good efforts and intentions as well as personal achievements
- Strives to improve the health of school personnel, families and community members as well as pupils, and works with community leaders to help them understand how the community contributes to, or undermines, health and education. The key features of Health Promoting Schools are illustrated in Figure 21.

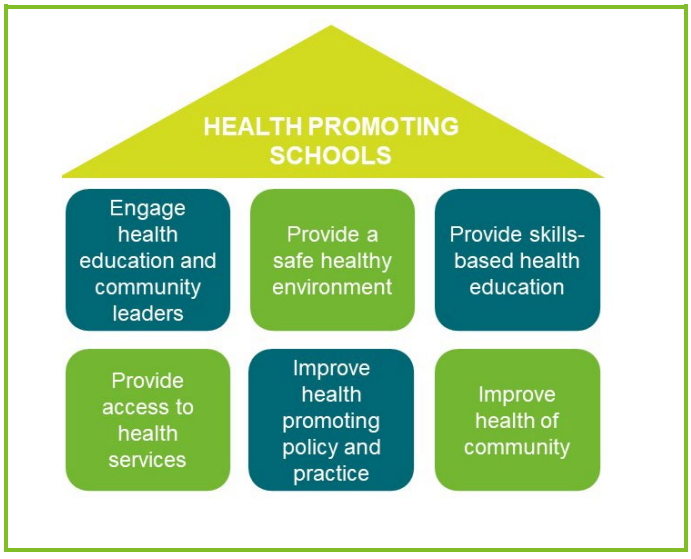


Figure 21. Key features of Health Promoting Schools

Source: WHO 2017.[31]

The whole-of-school approach encourages comprehensive interventions rather than knowledge-focused interventions which, implemented alone, lack evidence of effectiveness.[20,21] A comprehensive approach should also be linked to opportunities for PA outside of school and school hours, such as to encourage and support active travel to and from school, and participation in out-of-school or community-based sport and other activities.

Essentially the WHO Health Promoting Schools framework comprises three core components:

- **Curriculum** (teaching and learning)
- **School organisation** (ethos and environment)
- **Partnerships and services**.[31,32]

The next section of this chapter discusses the evidence for each of these in turn, by the respective phases of education (preschool, primary/secondary, tertiary). The following ***Case Study*** provides an example of a program in Victoria that is based on the WHO model for Health Promoting Schools.

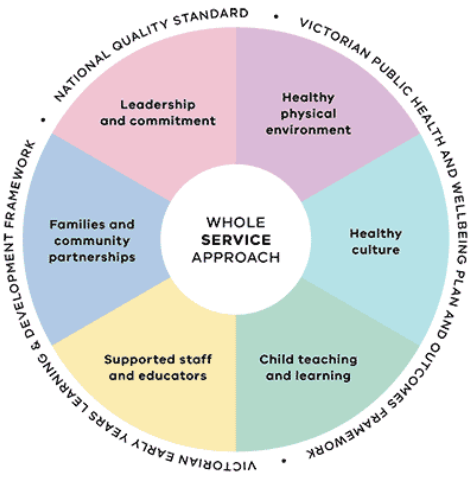
Case study: Achievement Program (Victoria)

www.achievementprogram.health.vic.gov.au/

The **Achievement Program** supports early childhood services and schools to create healthy places for learning (note, there is also a program for workplaces). Schools and services that register with the program receive an evidence-based health and wellbeing framework that is aligned with WHO's model for Health Promoting Schools (see right for the model developed by the program for Early Childhood Services).

The health priority areas for Healthy Early Childhood Services and Schools include PA.

Participating schools and services also receive support from program staff and a wide network of regional health promoters. The program is free, supported by the Victorian Government and delivered by Cancer Council Victoria.

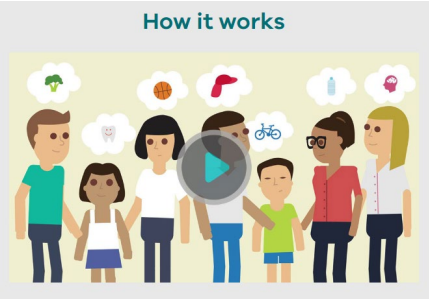


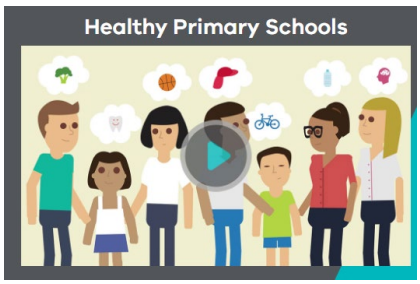
The key principles that underpin the **Achievement Program** are:

- Create a healthier environment using the policies, tools and resources provided by the program
- Build on the work that is already being undertaken to support health and wellbeing
- Lead by getting Victorian Government recognition as a healthy place
- Thrive by helping everyone in the community be healthy and well.

Watch these videos for further information about how this program works.

Videos explaining how the program works





Curriculum, teaching and learning

Preschool education

While the strongest evidence for facilitating the development of physical literacy in early childhood education and care settings are theory-based interventions that include structured activities delivered by experts[33], some observational studies have suggested that in-service training of early childcare staff to integrate PA into the daily routine could be a more feasible yet effective option.[34-36]

Interventions should be tailored to the target group of parents or care providers, in particular by addressing cultural considerations, community needs and the provision of ongoing support.

In the context of the childcare setting, the delivery of structured PA sessions that can be easily incorporated into the daily 'routine' and are delivered through a hands-on approach may be most effective at increasing children's moderate to vigorous intensity PA (MVPA). Programs should focus on changing parent or provider practices to effect change in children's PA levels, and on measuring changes in parent or provider behaviour to help elucidate the impact of those behaviours on children's PA.[37]

Primary and secondary education

As noted earlier, knowledge focused interventions, implemented alone, lack evidence of effectiveness[20,21], however knowledge-based approaches can be improved when they are combined with skill-based (such as PE) or other approaches.

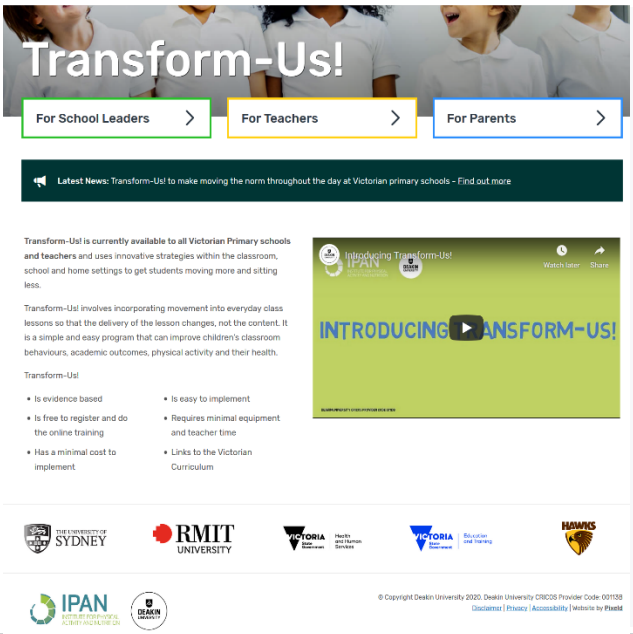
Systematic reviews about the promotion of PA in primary[38-40] and secondary[39-42] schools have been reported. Primary school interventions often contain multiple components (e.g. diet, family) implemented alongside PE interventions, making it difficult to disentangle effects.[38] However there is strong evidence for enhanced school-based PE to effectively increase the amount of time students spend in MVPA during PE classes.[39] PE lessons can be enhanced by providing professional development training and resources to non-specialist teachers. Recent evidence has shown that a staff development intervention, delivered partially online and designed to minimise transition time between activities and maximise movement and skill development can significantly increase MVPA among students during PE.[43]

Taken together, evidence from these studies suggest that: (i) school PE should promote and encourage active play and engagement. PE teachers should be encouraged and supported to keep adolescents physically active for at least 50% of allocated PE time as recommended by organisations such as the US Centers for Disease Control and Prevention and the UK Associations for Physical Education [53]; (ii) noting that PE is not the sole source of PA in the school day, cross-curricular mapping of potential sources and support for student PA should be undertaken and the opportunities leveraged; (iii) student enjoyment of PE needs to be nurtured and facilitated more than is currently the case; (iv) school policies (such as changing into PE uniforms) for PE should not restrict participation in these lessons. School psychologists could assist PE teachers to ensure that group allocations and the actions of teachers during PE are promoting strong and significant social relationships.[44]

There is also benefit in integrating PA through activity breaks or experiential learning into regular/academic classroom lessons (i.e. outside of PE lessons).[12,44] Studies have shown that these improve concentration, test scores and academic behaviours[17,44,45], although the studies which demonstrate the positive relationship between PA breaks during class time and educational outcomes are mainly low and moderate in quality.[44,45] School leadership and policy implementation which normalise PA as part of standard pedagogy would be required to enable more teachers to implement active breaks in the classroom. The ***Case Study*** below is an example of a program currently offered to all primary schools in Victoria that aims to equip teachers with the skills to deliver lessons in a more active format.

Case study: Transform-Us! (Victoria, primary schools)

https://transformus.com.au/



Transform-Us! uses innovative behavioural, pedagogical, and environmental strategies within the classroom, school and home settings to get students moving more and sitting less. Transform-Us! is currently available to all Victorian Primary schools.

Transform-Us! strategies involve incorporating movement into everyday class lessons – the delivery of the lesson changes, not the content.

It is designed to be delivered by all primary classroom teachers and it does not focus on sport or PE. Full lesson plans and supporting resources are made available after the online teacher training module is completed.

Impact

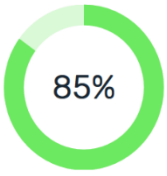
The final results were very positive. Compared to a comparison group, students who participated in Transform-Us! had:

33 minute reduction in sitting per day

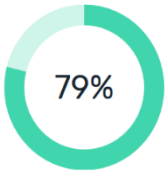
5 minute increase in moderate to vigorous activity per day

Lower Body Mass Index (BMI), waist circumference and systolic blood pressure

Higher vitamin D levels



of students experienced greater concentration after an active break.



of students improved time-on-task after an active lesson.

Tertiary education

Embedding PA and health across all disciplines and curricula in tertiary education settings remains limited in Australia.[46] However, policies in university and vocational education settings which direct the inclusion of PA curriculum for students in relevant sectors such as medicine and health, transport, urban planning, social care, tourism, recreation, and sports and fitness would have significant reach in upskilling future generations in the promotion of PA and design of activity-friendly environments and infrastructure. For example, quality education of undergraduate PE teachers while at university would improve their ability to teach FMS in schools and provide quality PE experiences to school students.[47] Interventions embedded within the tertiary curriculum have also been found effective in improving PA among students themselves. These have involved frequent face-to-face contact with facilitators and use of available facilities such as a fitness centres, walking paths and sports fields.[48] Allocating funding to PA programs and environmental improvements would help to create activity promoting environments in tertiary settings, however, more confirmatory research is needed to guide future program specification and investment.[11,48]

School organisation, ethos and environment

Preschool

In preschool settings, there is some evidence that modifications to the physical environment, such as playground markings or rearrangement of indoor areas, can significantly improve PA levels of children[33], especially if educators and families are engaged with these environments with the children. Evidence of policy and ethos interventions in the preschool setting are lacking.[34]

Primary and secondary school

Inside the classroom, there is a suggestion that integrating dynamic seating and more flexible learning spaces into the primary school classroom environment hold promise for reducing children's sitting time and increasing their standing time.[45,49-51]

Many observational studies discuss the importance of a supportive school organisational culture, especially among teaching staff, for PA interventions in schools. A whole-of-school policy or strategic approach is one way to achieve this. Policy approaches which formalise committees of teachers and executive staff in schools are sometimes proposed to enhance the implementation of whole-of-school strategies to increase PA, however evidence for the effectiveness of school-level policies on PA is mixed.[15,52,53]

Environments, both physical and social, can influence student PA behaviours.[47] Strategies to achieve more PA for students include increasing recess (break) times, as well as improved facilities, access to spaces, rules and policies that promote PA and shifts in social norms. Several systematic reviews of school recess interventions to increase PA have been published.[54-58] This body of evidence indicates that interventions based on playground markings, game equipment, or a combination of the two, do *not* seem to increase the PA of preschoolers and school children during recess, whereas interventions based on playground markings plus physical structures (e.g. football goal posts, basketball hoops) *can* increase the PA of school children during recess in the short to medium term.[55] School playground reconstruction has resulted in reduced sedentary time among younger children but has otherwise to date shown limited effects on PA levels.[55,59] The investment required would need to be weighed against the low cost improvements/additions that can be made such as line markings, fixed/unfixed equipment and structures which as noted above, can be effective strategies.

After-school PA interventions have shown mixed effectiveness in increasing PA levels to date; more evidence is required to confirm their status in the best strategic intervention mix.[60] The US Community Preventive Services Task Force has also noted the value of promoting initiatives such as *Safe Routes to School*.[61] Recent reviews provide modest support for the effectiveness of school-based AT strategies for increasing PA and AT in children, with walking school buses and educational strategies demonstrating the greatest potential.[22] AT projects that focus on both infrastructure and non-infrastructure initiatives achieve the best outcomes; other important elements that may contribute to success include having supervisors at pedestrian crossings, school drop-off points, bike

education programs and school travel plans.[62-64] The quality of evidence in the reviewed studies is generally poor and few interventions included secondary schools, highlighting a need for more research targeting secondary school settings. This is important given that the factors associated with active school travel may differ markedly between children and adolescents. Finally, because some children may live too far from their school, interventions aiming to promote AT to/from other destinations such as parks, shops, sport venues, and friends' and relatives' houses may also be warranted.[62] This creates the current challenge, which is that these programs generally achieve low population reach, and scaling-up AT for school aged children would be contrary to existing trends in many countries, including Australia.

Tertiary settings

Evidence for the tertiary phase of education, including vocational education and training, is underdeveloped.[11] The whole-of-institution approach is encouraged in an International Charter – the Okanagan Charter (2015) however few institutions in Australia appear to be explicitly adopting this charter and its principles for achieving a health promoting university setting which promotes PA for students and staff.[46,65]

Partnerships and services

There is evidence that partnerships which engage experts to provide professional development and training for education providers, in the absence of tertiary qualified PE teachers, facilitates the progression of students along the physical literacy continuum. To achieve this, financial resources are required to enable contractual agreements to be established between providers and schools. Funding and grants have been trialled in schools to facilitate community and sports organisations partnerships and services. Strengthening the links between education settings and community-based sports and activities shows promise but evidence of effectiveness is required. These community links should be underpinned by physical literacy pedagogy rather than performance pedagogy, sustained and promote PA to influence school culture.[66]

Some studies have trialled intervention components in schools such as newsletter snippets, text messages, active homework, websites or school specific mobile applications (apps) to engage families in PA promotion as partners, as part of multicomponent programs.[67,68] More research is required to understand the impact and cost effectiveness of such approaches for engaging families in PA promotion. The main gap in evidence in the education domain is the *lack of evidence for real-world implementation at scale*. A good example of a current partnership innovation designed to address this gap and to advance scaled up implementation of effective efforts in the primary school phase is ***Transform-Us!*** (see the ***Transform-Us! Case Study***).[69]

3.1.3 What works? Infrastructure and program specification

The specification for education as a 'recommended' strategy domain requires whole-of-school programs that include quality PE and provide adequate facilities and programs to support PA for *all* children (Table 14). The primary school stage of education offers great potential to influence children's PA and health, but the availability of specialist PE teachers is often limited to the secondary school stage of education, so there are strategic and logistical challenges to overcome in the primary phase in order to take full advantage of the opportunities available.[a] This could involve assessing the value of strategic linkages between secondary and primary schools and/or linkages with PA and sport provider organisations in the wider community to achieve better physical literacy outcomes. There are many opportunities to get children moving throughout the school day through active lessons, active breaks, during recess and lunch breaks, before and after school (including AT), as well as through changes to the classroom and broader school environment to support PA (see the ***Transform-Us! Case Study***).

[a] Mandated PE, delivered by movement specialists, is rarely delivered in primary school but there is accumulating evidence to indicate the importance of considering this policy option.

Table 14. Recommended design specifications for whole-of-school programs to promote physical activity

Design features	Evidence-based program specification
Whole school approaches	• Strengthen formal pre-service and in-service training for preschool, primary and secondary school teaching staff and administrators[15] • Ensure implementation of inclusive access for all to PE, PA and sport[8-10] • Ensure school leadership support for PA policy development and implementation within local contexts[31] • Integrate theory (ecological models, whole-of-systems thinking) within program design, implementation and evaluation • Develop design guidelines for facilities which ensure educational environments are activity permissive, including fixed and portable play equipment • Provide positive, challenging and developmentally appropriate learning experiences • Foster empowerment and inclusive participation in PA
Preschool educational settings	
Availability of adequate facilities	• Include more frequent outdoor free-play times of shorter duration rather than fewer of longer duration[10,70] • Promote outdoor play and encourage educators to actively engage with children in this learning environment[10]
Availability of programs to support PA	• Deliver structured PA sessions with a hands-on approach, incorporated into daily routines; provide hands-on training to staff to enable effective delivery[10,37] • Programs should focus on changing parent or provider practices to effect change in children's PA levels[10,37]
Primary and secondary phases of school education	
Availability of adequate facilities	• Provision of equipment, spaces that engage and challenge students to initiate unstructured PA during recess and lunch breaks in the school day, including allocation of time and encouragement from school staff to do so[10,53-56] • Flexible learning spaces for PE and academic lessons[45,49-51]
Availability of programs to support PA	• Mandate delivery of high-quality organised PA, with PE lessons as a core component, across the school week (at least 150 minutes per week) with a focus on enhancing physical literacy[30] • Ensure the presence of qualified sport and PE teachers in primary and secondary schools and provide flexibility in timetabling and curriculum for sports opportunities[10] • Comprehensive school PA programs that include curricular and non-curricular PA promotion elements need to be implemented at scale to increase activity levels across the school day[10,71,72]

3.1.4 What are the recommendations for investment and action?

A recommended investment

Both the WHO[73] and US Community Preventive Services Task Force[74] designate investment in the education domain as 'recommended'. The National Heart Foundation also provides recommendations for this domain in its *Blueprint for an Active Australia* (see Appendix 1 for an overview of the Blueprint).[75] Finally, a recent review has been undertaken by the SPRINTER research group at the University of Sydney, which makes relevant recommendations.[10]

Cost effectiveness of school-based physical activity interventions

Two recent reviews have concluded that school-based PA interventions are cost effective compared to other population-based interventions in terms of PA outcomes.[76,77] The Physical Activity 4 Everyone trial involved a 24-

month multicomponent school-based intervention implemented in secondary schools located in disadvantaged communities.[78]

Cost effectiveness analysis (CEA) was undertaken from a societal perspective and conducted on an intention to treat basis. Table 15 shows the incremental cost effectiveness ratios (ICERs) for each incremental outcome measure and the additional expenditure required to deliver each additional unit of benefit. ICERs of $56/minute of MVPA gained and $1/MET hour[a] gained provide support for the cost effectiveness of this program, which, it should be noted, chose to focus on disadvantaged communities.

Table 15. Cost-effectiveness analysis (CEA) for the Physical Activity 4 Everyone Program

Incremental outcomes	Incremental cost-effectiveness ratios	
Additional minute of MVPA per day	A$56	[95% CI $35-$147]
MET hour gained per person per day	A$1	[95% CI $0.6-$2.7]
BMI unit avoided	A$1408	[95% CI $788-$6570]
BMI z-score 10% reduction	A$563	[95% CI $282-$3942]

MVPA = moderate to vigorous physical activity, MET = metabolic equivalent (unit of energy expenditure), BMI = body mass index

3.1.5 What other strategies intersect with this domain?

The education domain intersects with many of the identified *domains for best investment* in PA.

The eight domains for best investment

1. Sport and recreation
2. Communication and public education
3. Transport and the environment
4. Urban design and infrastructure
5. Primary and secondary healthcare
6. Education
7. Workplaces
8. Community-wide programs

Stakeholders in the education domain have great potential to influence participation in sport and recreation activities outside of school, especially during childhood. The strategies which the sport, workplace, transport and environment, urban design and infrastructure, healthcare, community-wide programs and communication and public education domains could employ in collaboration with the education domain include:

[a] A MET hour is a calculation of time that takes into account the intensity of the PA expressed in METs (metabolic equivalent) and the duration of participation.

- Consistent public communication to parents and students about the importance of PA to develop increased participation further as a public priority
- Encourage AT to school and development of supporting infrastructure, such as dedicated walking and bicycle paths, bike racks, AT groups using technological support
- Enable access to school environments outside of school hours to increase access to play spaces
- Partner with sports organisations to deliver structured activities both during school times and before and after school hours
- School communities have the potential to lead or contribute to community-wide programs to increase PA.

3.1.6 What are the implications for policy?

Effective policies and programs are already available in the education domain. Implementation of policies at scale which promote a whole-of-school/institution approach to PA would be improved by:

- Establishing PA policies for the education setting with clear language, and specifying monitoring and accountability mechanisms specific to each sub-category – including PE, physical literacy, active school transport, school environment
- Using theory and/or logic models to inform planning, implementation and evaluation of school-based approaches to PA – currently very limited in real-world and scaled-up application[79]
- Mandating delivery of high-quality organised PA including scheduled PE that focuses on developing physical literacy[10]
- Providing a major boost to PE in Australian schools; encouraging more schools to achieve the recommended standard of adolescents being physically active for at least 50% of allocated PE time, as recommended by Australian experts, US Centers for Disease Control and Prevention and the UK Associations for Physical Education; providing targeted support to support the teaching of PE for schools in disadvantaged areas[10]
- Allocating funding to PA programs and environmental improvements across education domains which create activity permissive environments; funding professional development to equip primary and secondary teachers with the necessary competence to deliver these innovative programs[10]
- Focusing on progressing children and adults along the physical literacy continuum while engaged in educational settings through structured curricular activities and by ensuring accountability through reporting against these standards at school and system level[10]
- Supporting early intervention programs for 3–6-year-olds to build Physical Literacy (including FMS) in the preschool years[10]
- Strengthening FMS acquisition during primary and into secondary school years[10]
- Examining the feasibility of developing a program of specialist primary school PE teachers, perhaps in coordination with high schools.[10]

- **School-based PA interventions are cost effective compared to other population-based interventions in terms of PA outcomes**

- **Schools need to be encouraged to achieve the recommended standard of children being physically active for at least 50% of allocated PE time**

- **Intervention programs to build Physical Literacy (including fundamental movement skills) are needed urgently in the preschool years, with reinforcement in primary and secondary school phases**

- **Research and evaluation priorities are:**

(1) Effectiveness of implementation at scale (see Transform-Us! Case Study)

(2) Standardised surveillance for PA, across the life course; regular measuring of children's height and weight, fundamental movement skills and PA at key stages of primary and secondary schools, with opt-out (passive) consent.

Further resources and examples

Refer to the links listed under 'Education' in Appendix 5 for other useful resources and guidance.

Refer to Appendix 3 for some illustrative examples of policies, programs and other initiatives in Australia that relate to this domain (particularly those described under GAPPA 1.4, 3.1, 3.3).

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3.2 The transport domain and physical activity

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Note: Refer also to Chapter 3.3 which contains relevant evidence and recommendations relating to the urban design and infrastructure domain.

3.2.1 How does this domain contribute to a more active society?

Transport involves any journey from one place to another (including the trip to work) but most trips are made for social reasons, to transport a passenger (e.g. a child) or for shopping. The commute to work is often targeted for intervention because it is generally a regular and potentially less complex trip. The convenience of motorised transportation and the design of the built environment has limited physically demanding travel. Where walking and cycling were once the main mode of travel, the proliferation of the car has reduced time spent travelling actively while simultaneously increasing sedentary time. In addition, contemporary car-ownership, and the vast roadway network that prioritises motorised travel to accommodate it, adversely impact public health through environmental risk exposures such as air pollution, noise, greenhouse gas emissions, and traffic hazards.

The promotion of walking and cycling for transportation complemented by public transportation or any other active transport (AT) represents a promising strategy not only to address problems of urban traffic congestion, environmental pollution and climate change, but also to provide substantial health benefits.[1-3] Despite associated risks of exposure to traffic and to air pollution, AT policies can overcome car dependence and increase PA levels.[4] The population benefits of AT (walking and cycling) have been shown to reduce the risk of all-cause mortality independent of other reported PA.[5] A recent evidence review highlights the importance of the AT environment as a key domain for achieving moderate to vigorous intensity PA in children, adolescents and adults.[6]

More than many other forms of PA, walking and cycling, in particular commuting for transport purposes (i.e. getting from place to place) are easily incorporated into a daily routine, increasing the potential for adoption and maintenance over time and thus the potential for population health impact[7] and increased health and social equity.[8-10] A model of the health impacts of AT policies is shown at Figure 22, adapted from Mueller et al[1] and Larouche.[11]

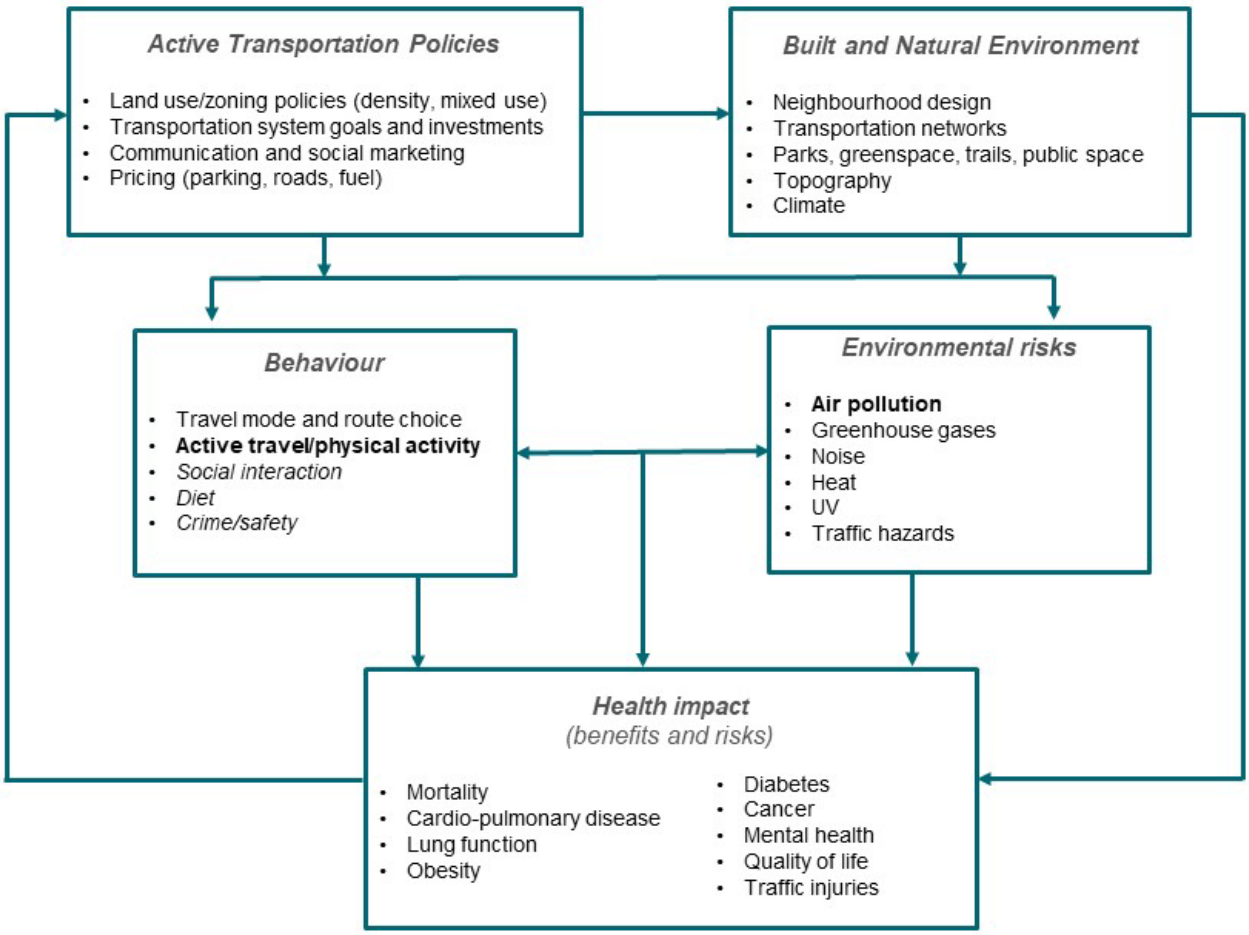


Figure 22. Health impacts of Active Transportation policies, conceptual model

Source: Adapted from Mueller[1] and Larouche[11].

[Note: In Figure 22, variables shown in bold have the strongest exposure-health evidence quantified; variables in italics are the most challenging for researchers to measure well and investigate]

3.2.2 What is the supporting evidence?

In the 'best buys and other recommended interventions' to tackle chronic diseases, the WHO has categorised this set of strategies as 'recommended'.[12] To be consistent with this designation, strategies must ensure that macro-level urban design incorporates core elements of:

- Easy access to a diversity of destinations (via residential density)
- Integration with public transport
- Connected street networks that include footpaths and cycling infrastructure.

This assessment is consistent with the finding of the US Community Preventive Services Task Force (CPSTF).[13] The CPSTF finding is based on longitudinal research examining coordinated approaches that combine new or enhanced elements of walking or cycling transport systems with new or enhanced land use and environmental design features (16 studies).[13] Evidence from additional cross-sectional comparisons shows that built environment interventions are required as a package.[13] Combinations of these urban design built environment characteristics are associated with higher levels of transport-related PA, recreational PA and total walking among exposed people (74 studies).[13]

A recent review on the effectiveness of AT interventions (involving 84 studies that used a control or comparison group), found substantial robust evidence for the positive impact of a range of intervention types to increase AT.[14] The strongest evidence for positive impact was in relation to town- or city-wide interventions which used multifaceted attempts combining infrastructural modifications with social marketing and behaviour change initiatives to encourage uptake of new or improved infrastructure.[14] The review also found evidence to support more localised environmental modifications to improve individual routes or networks.[14] Strong evidence was also found to support the effectiveness of school-based AT interventions, and individualised marketing approaches to change travel behaviours (e.g. personalised travel planning initiatives such as 'TravelSmart' – see ***Case Study*** below).[14] Evidence in this category of individualised approaches is overwhelmingly dominated by the personalised travel planning studies conducted under the 'TravelSmart' initiative, shown to be almost universally positive for walking and cycling.[14] A review of first generation programs in Australia has been reported by Taylor[15], while the challenges in gaining support and sustained investment have been reported by Williams.[16]

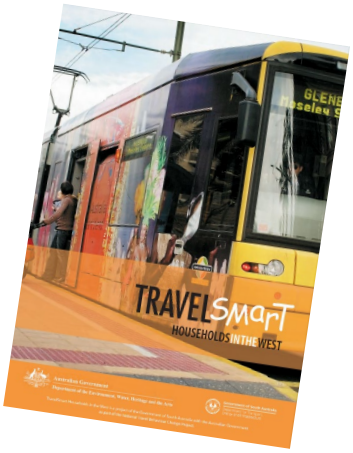
Case study: TravelSmart® - individualised marketing (Australia, UK, USA)

TravelSmart® was designed to be a cost-efficient marketing approach to increase the use of environmentally friendly transport modes (walking, cycling, public transport) and thereby reduce the volume of car traffic.

The intervention

The TravelSmart intervention involves three key phases, each based on personal contact with the households in a target area. The process involves dialogue which motivates people to consider and review their travel behaviour in the context of their lifestyles. People who are interested in changing are supported and encouraged, but the choice is always left to the individual.

History and implementation



The history of the TravelSmart program in **Western Australia** is instructive – Click Here

Various TravelSmart programs have been implemented in Australia, UK and the USA.

In mid-2003, the National Travel Behaviour Change Project was established, in a partnership with the Australian Government Department for the Environment, Water, Heritage and the Arts (formerly the Australian Greenhouse Office) and the Governments of South Australia, Victoria, Australian Capital Territory and Queensland.

Relevant resources

A report for TravelSmart in **South Australia** is available and has been described as a Best Practice Case Study by Philp and Taylor[17] – Click Here

A TravelSmart Workplace Factsheet from **Western Australia** is available – Click Here

3.2.3 What works? Infrastructure and program specification

The transport infrastructure and program specification for regional level and local urban planning level is shown in Table 16. Specifications for 'what works' in relation to other types of AT interventions are not as yet sufficiently clarified, given the diversity of approaches that have been found effective and the lack of reported detail on the nature of interventions and contribution of individual components towards effectiveness.[14] For example, effective school-based interventions have included safe routes to school approaches (using environmental modification and educational/motivational activities), competition-based approaches, bike training and education, and walking school buses.[14] The most appropriate approach for any one school will likely be based on local circumstances,

consistent with a whole-of-school approach (refer Chapter 3.1 Education). There are some common features for other intervention types; for example, individualised travel behaviour interventions have generally involved face-to-face contact with households and provided individually-tailored information to motivate and support people to review and shift their travel behaviours towards more active modes.[14] Refer to Chapter 3.5 Communication and public education and 3.6 Community-wide programs for further guidance.

Table 16. The 9D's for regional and local level urban planning to support active transport.

Design feature	Examples
REGIONAL PLANNING	
Destination accessibility Regional employment, facilities, and services conveniently accessible by public transport; destinations for daily living available locally	Jobs, facilities, and services within 30 minutes travel from home by public transport; daily living destinations within walking distance
Demand management Parking supply and pricing policies to increase the attractiveness of using alternative travel modes to driving	Building codes and other government policies that minimise car parking
Distribution of employment An appropriate mix of employment available across a region	A job–housing balance from 0·8 to 1·2
LOCAL URBAN PLANNING	
Design of urban centres overall Urban design creates walkable catchments around activity centres and incorporates accessible public open space; street networks minimise distances between homes and daily living destinations, reduce traffic exposure, and create safe pedestrian, cycling, and public transport networks; lot/plot layouts designed to increase residential densities and promote natural surveillance	High street connectivity including ped-sheds ≥ 0·6 within 0·8–1·2 km (i.e. 1–15 minutes walk) of activity centres, transport hubs, and schools; separated pedestrian and cycle paths; local public open space provided; housing overlooks streets and public open spaces. Design that makes car use inconvenient: 'no car zone', 'pedestrian friendly zones', green traffic light settings consider volume of *walkers* not volume of cars
Pedestrian network	Footpaths, trails, traffic calming, intersection design, well-lit streets and landscaping
Cycling network	Bicycle systems, protected bicycle lanes, trails, traffic calming, intersection design, well-lit streets and landscaping
Public transport network	Expanded transit services, times, locations, and connections
Design of parks and recreational facilities	Public parks, public recreational facilities, private fitness facilities
Density Residential densities sufficient to support the viability of local business and high-frequency public transport services	Multi-unit housing built around activity centres with shops, services, and transport hubs. Smart growth communities and new urbanist designs, relaxed planning restrictions in appropriate locations to reduce sprawl, sustainable compact cities and communities with affordable housing

Design feature	Examples
Distance to public transport High-frequency public transport located within short walking distances from homes	Bus stops accessible ≤ 400 m; rail stops accessible ≤ 800 m from homes
Diversity/Mixed land use Residential areas built with different types of housing mixed with commercial, public, and recreational opportunities	Residential, commercial, cultural, institutional, or industrial land uses that are physically and functionally integrated to provide a complementary or balanced mix of restaurants, office buildings, housing and shops. Different types of housing available near, around and on top of shops and services required for daily living
Desirability Neighbourhoods designed to be safe, attractive, and accessible; public transport that is convenient, affordable, frequent, safe, and comfortable	Crime prevention design principles incorporated into residential and commercial developments; urban greening strategies implemented; traffic minimised, calmed and separated from pedestrians and cyclists, particularly near schools

Source: US Community Preventive Services Task Force (2017)[13]; Giles-Corti et al (2016)[18].

3.2.4 What are the recommendations for investment and action?

A recommended investment

Alongside the established 'best buys' WHO has designated as 'recommended' investment to achieve macro-level urban design that incorporates: connected street networks that include footpaths and cycling infrastructure; easy access to a diversity of destinations and access to public transport; and the housing (and therefore population) density required to make mixed use planning and public transport services viable.[12,18] Priority should certainly be given to investing in whole-town or city-wide programs given the evidence supporting their effectiveness at a population level.[14] However, investments should not be limited to these approaches given the range of other AT interventions that have also been found to be effective, including improving individual AT routes or networks, school-based AT interventions, social and individualised marketing programs and workplace programs.[14]

Cost effectiveness supported by accumulating evidence

Cost effectiveness analysis (CEA) in this set of policy and program actions is complex and the current WHO position is that the current evidence does not allow a robust CEA, although a recent systematic review does provide a good synthesis of the current knowledge and challenges.[19] A wide variety of potential benefits/risks and cost categories have been included into the available economic evaluation of AT interventions, with limited uniformity of type or methodology of inclusions between studies. These inclusions incorporate a multitude of health, social, economic and environmental considerations. The systematic review included 17 cost-benefit studies reporting cost-benefit ratios for hypothetical interventions, with all except one finding that benefits exceeded costs.[19] One study reported incremental cost effectiveness ratios (ICERs) and a comparative analysis indicating the conditions required under each approach for the results to be most similar for two hypothetical scenarios; the case estimates of A$176 per QALY (quality-adjusted life year) to A$17,639 per QALY[a] are considered cost effective.[20] Another study presented results for each of three evaluated scenarios in terms of costs per averted DALY (disability-adjusted life year), ranging from approximately A$8,353 per DALY[b] to just over A$34,384 per DALY averted.[21]

[a] Based on GBP/AUD exchange rate of 1.87.

[b] Based on GBP/AUD exchange rate of 1.87.

Clear program design and implementation specifications available

The evidence allows clear specification of the required actions for walking and cycling infrastructure (Table 16). Full implementation of the recommendations for policy and program investments will be more or less feasible according to specific country contexts and the resource constraints that apply to those responsible for financing, planning and implementation of the intervention(s).

Current evidence highlights the importance of cities' existing characteristics in determining health impacts of AT policies. Characteristics such as baseline PA levels in the population, traffic safety or air quality, can increase or decrease the benefits associated with AT policies.

Greater health benefits are achieved when the policy focus is on the more sedentary population and by implementing mutually reinforcing strategies that discourage private cars use by making this transportation mode slower, less convenient and more costly compared to AT.[22] The implementation of AT policies with an improvement in traffic safety (in particular, for AT modes) will lead to greater net health benefits.[23] Improving air quality beside the implementation of an AT policy will also reduce the risks for cyclist and pedestrians (as for all other citizens) and increase the health benefits of the interventions.[24]

3.2.5 What other strategies intersect with this domain?

The transport domain intersects with many of the identified *domains for best investment* in PA.

The eight domains for best investment

1. Sport and recreation
2. Communication and public education
3. Transport and the environment
4. Urban design and infrastructure
5. Primary and secondary healthcare
6. Education
7. Workplaces
8. Community-wide programs

In particular, transport strategies closely intersect with those in the urban planning and infrastructure domains. Urban planning determines land-use diversity and density which influences individual decisions to choose AT. Effective networks of footpaths and bike paths, integrated with public transport, support both AT and active recreation. This infrastructure – combined with the access to destinations and public transport and connected street networks – delivers a dual benefit of reducing traffic congestion and increasing PA.

Transport and planning sectors could work in collaboration to develop or refurbish facilities and AT infrastructure between transport hubs such as train stations, sports facilities, schools and business centres, to ensure the design of surrounding streetscapes are pedestrian and cycling-friendly, and have appropriate end-use facilities (e.g. safe bicycle storage) to support AT to and from these destinations. This is also important to address equity of access to key destinations and opportunities for PA such as sport and recreation facilities and programs.

Communication and public education strategies (such as awareness raising campaigns, promotional events and trip planning support) can help promote attitudinal and behavioural shifts away from car use and towards greater walking, cycling and public transport use. Behavioural interventions can also be directed at schools and workplaces where there is a potential to gain widespread population reach, such as through walk or cycle to school programs. Transport and urban planning strategies will need to play a complementary role to enhance the effectiveness of such programs by creating safe pedestrian and cycling environments around these settings.

3.2.6 What are the implications for policy?

A package of integrated transport and planning interventions aligned at the regional and local level is needed to create safe, convenient and comfortable opportunities and environments for AT while reducing the attractiveness of private car use. Key aspects involve ensuring easy access to a diversity of destinations, integration with public transport, promoting the residential density needed to support viable local businesses and frequent public transport services, and connected street networks for walking and cycling. Policies, programs and funding investments should initially prioritise underserviced and socioeconomically disadvantaged areas (the areas which are also more likely to suffer the negative externalities of car dependency in terms of noise, air pollution and road injury).[18,25]

Behavioural and social marketing interventions have a complementary and valuable role to play in shifting social norms and travel mode preferences and can be incorporated into interventions in other settings such as workplaces and education to encourage active commuting to and from these destinations. The funding, packaging and sequencing of behavioural change and infrastructural interventions will need to be carefully considered so that target populations for behaviour change interventions have the benefit of supportive infrastructure to facilitate changes in travel modes.[14] There is also a need to improve knowledge around what works and for which groups; AT funding should therefore require robust evaluation of interventions (i.e. using control groups where possible, long term follow ups over at least three years, collection and analysis of demographic and PA profiles of beneficiaries, and economic or value for money evaluation).[14,25]

Finally, the area of policy co-benefits is increasingly coming into focus, which will help enable greater alignment of the PA agenda with other critical issues – for example, Philp and Taylor have discussed implications of travel behaviour change for climate change mitigation and adaptation.[17]

Further resources and examples

Refer to the links listed under 'Transport and the environment' in Appendix 5 for other useful resources and guidance.

Refer to Appendix 3 for some illustrative examples of policies, programs and other initiatives in Australia that relate to this domain (particularly those described under GAPPA 1.2, 1.4, 2.1, 2.2, 2.3, 3.1, 3.3, 4.1).

- **WHO designates as 'recommended' investments designed to achieve macro-level urban design, incorporating:**
  - **Connected street networks (that include footpaths and cycling infrastructure),**
  - **Easy access to a diversity of destinations and access to public transport, and**
  - **The housing (and therefore population) density required to make mixed-use planning and public transport services viable**
- **Other effective investments include building and connecting active travel (AT) networks; school-based AT interventions; social and individualised marketing programs and workplace-based programs**
- **The policy co-benefits for AT and PA are increasingly important; the implications of travel behaviour change for climate change mitigation and adaptation have already been identified and will only increase in importance.**

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3.3 The built environment domain and physical activity

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Note: Refer also to Chapter 3.2 which contains relevant evidence and recommendations relating to the transport domain.

3.3.1 How does this domain contribute to a more active society?

People's physical activity (PA) is embedded in the built environment surrounding them. The built environment includes workplaces, schools, home, shops, and the space between these places. Urban design and infrastructure includes the aforementioned settings, as well as public open space and green areas, footpaths, cycleways, and public transport systems. Integrated regional and local land-use and transport interventions that support health include design, diversity, density, accessible public transport and destinations, demand management, distribution of employment, and desirability.

This domain can make a key contribution to a more active society through compact and mixed-use urban designs that encourage a transport modal shift away from private motor vehicles towards walking, cycling, and public transport as well as facilitating walking and cycling for leisure.[1] Moreover, if environmental factors are related to PA levels, then environmental interventions have the potential to reach large groups of people, and are likely to achieve sustainable outcomes.[2] Environments that facilitate people to be more active are also associated with co-benefits such as physical and mental health, social cohesion, safety/injury prevention, and less traffic, air pollution, noise, and crime (see Chapter 1.1 on co-benefits).[3] These co-benefits are in line with the UN's Sustainable Development Goals.[4]

3.3.2 What is the supporting evidence?

In the built environment domain, we rely very much on well implemented longitudinal studies which include objective measures of the environment to provide appropriate evidence for recommended policy actions. Taken as a total body of research, there is now sufficient evidence from such longitudinal studies to recommend the adoption of design features shown as most likely to influence PA as a very promising strategic approach and one that is recommended by the WHO (see below).

A 2019 meta-analysis of social and built environment factors associated with obesity was recently reported by Zhang; it identifies design factors shown to have greatest promise and those requiring further investigation.[5] The most promising factors relate to: (i) facilities for pedestrians and cyclists; (ii) street connectivity; (iii) residential density; (iv) land use mix; (v) retail density; and (vi) access to public transportation. Factors concerning different age groups, minority populations, groups with low socioeconomic status, food environment, and street-level urban design features need further research evidence.

A 2018 systematic review of the built environment as a determinant of PA was reported by Kärmeniemi and colleagues and examined 21 prospective cohort studies and 30 natural experiments.[6] They found that objectively measured improvements in the accessibility of different types of destinations, public transportation and land use mix were associated with increased PA. The researchers concluded that creating new infrastructure for walking, cycling and public transportation could induce demand for walking and cycling.[6] The results from a longitudinal study in Finland strongly supported the hypothesis that increasing mixed land use and access networks in urban environments can enhance regular walking and cycling at population level in adult populations.[7]

In the 'best buys and other recommended interventions' to tackle chronic diseases, the WHO has categorised this set of strategies as 'recommended'.[8] As stated in Chapter 3.2, to be consistent with this designation, strategies must ensure that macro-level urban design incorporates the core elements of:

- Easy access to a diversity of destinations (via residential density)
- Integration with public transport
- Connected street networks that include footpaths and cycling infrastructure.

This assessment is consistent with the finding of the US Community Preventive Services Task Force which in addition notes the value of promoting initiatives such as *Safe Routes to School*.[9]

3.3.3 What works? Infrastructure and program specification

Key recommendations from the evidence include the need to make active transport (AT) safe, attractive, affordable, and desirable; prioritise wide pedestrian paths and non-motorised transport/cycling lanes over motorised transport; and ensure sufficient separation of pedestrian/non-motorised and motorised transport. The evidence also points to the importance of urban design that makes neighbourhoods safe, attractive, destination accessible, and with green spaces and parks. Equitable distribution of employment across cities should be promoted, creating jobs and residences close within commutable distances. Similarly, schools, educational institutes, and homes should be located away from high-traffic routes. Another important recommendation is to change patterns of land use to increase density with mixed land use in very low-density areas and to decrease density in high-density urban areas. The evidence allows clear specification of the required actions (refer to Table 16 in Chapter 3.2).

3.3.4 What are the recommendations for investment and action?

A recommended investment

WHO has designated as 'recommended' investment designed to achieve macro-level urban design that incorporates connected street networks that include: footpaths and cycling infrastructure; easy access to a diversity of destinations and public transport; and the housing (and therefore population) density required to make mixed use planning and public transport services viable.[10,11]

Cost effectiveness supported by accumulating evidence

As stated before, while there is a plethora of cross-sectional studies on built environments and PA, only few studies have evaluated effects of environmental interventions and only some of those have taken economic benefits into consideration.[12] However, a recent systematic review provides a good synthesis of what we currently know about the cost effectiveness of strategies in this domain of urban design and infrastructure.[13] In 17 studies reporting cost-benefit ratios for hypothetical interventions all except one found that PA benefits exceeded costs (see Section 3.2.4).[13]

Systems approach a fundamental requirement

Ensuring that the full range of societal consequences of land use and transport decision making is considered requires a systems approach[14]; the design of the system needs to embrace governmental decision making together with routine collaborations between researchers, practitioners, and policy makers (Figure 23).[15]

Recommendations for investment align with the specification of the required actions set out in Table 16 of Chapter 3.2.

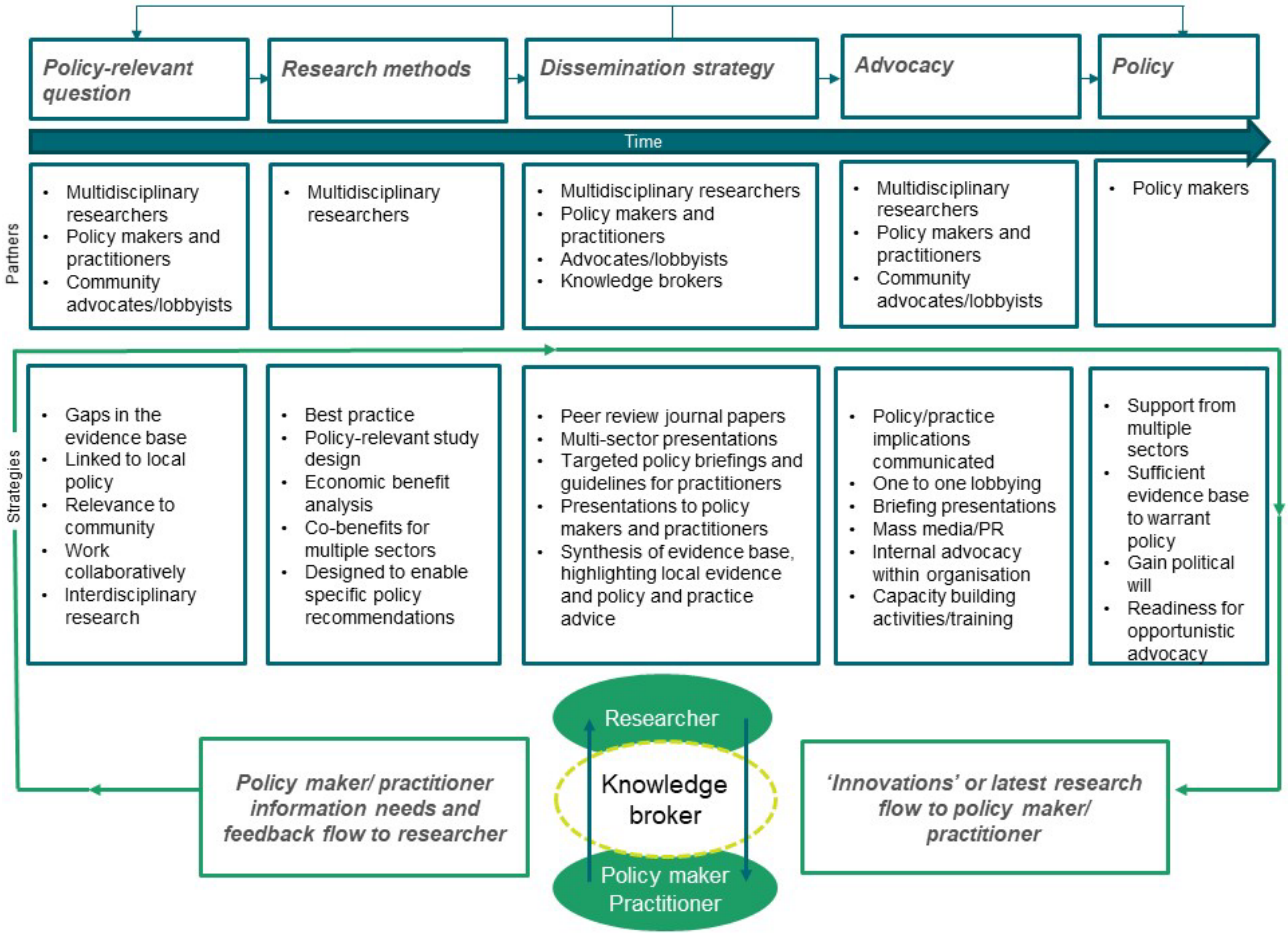

Figure 23. A systems approach to urban design and infrastructure decision making

Source: Adapted from Giles-Corti et al 2015.[15]

An evidence-based implementation toolkit and resources

The Heart Foundation's web-based toolkit **Healthy Active by Design** (Figure 24) provides design specifications, case studies and resources that support efforts to promote physical activity through the domain of the built environment. These resources include action resources prepared by the NSW Healthy Planning Expert Working Group on creating walkable neighbourhoods and using green infrastructure for urban cooling. It is available at: www.healthyactivebydesign.com.au/

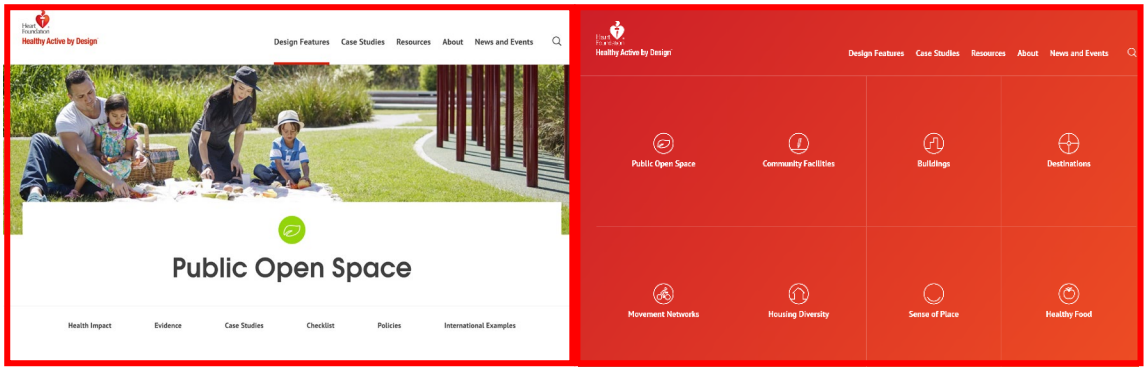

Figure 24. The Heart Foundation's 'Healthy Active by Design' web-based toolkit

Sport infrastructure

In relation to the built environment in sport and recreation settings, a range of standards have been developed around facility development and use to ensure sport is safe, enjoyable and more accessible to the community. Compliance with standards is mandatory in some instances. The governing body for each sport generally provides information about facility requirements and standards. The Australian Sports Directory provides a list of National Sporting Organisations recognised by the Australian Sports Commission. Each sport should be consulted for current information on facility requirements and use. In NSW, the Community Sport Infrastructure Resource Library has provided a guide for the planning, design and construction of innovative, sustainable and fit-for-purpose community sporting infrastructure. This includes a web portal with resources to assist with best practice design specification.

Walking, walking, walking

If some of the concepts and specifications in this chapter seem overly detailed, it may help to know that for the most part, we are talking about "*more walking*". Walking is the most common form of PA and is linked to the outcomes of better built environment, so is accessible across sociodemographic groups, and has good potential to influence the most inactive in society in an equitable manner.[16,17]

- There are clear design principles for planning integrated regional and local land use and transport environments to encourage a mode shift away from private car use and towards walking, cycling and use of public transport
- The Heart Foundation's web-based toolkit (Healthy Active by Design) provides design specifications, case studies and resources that support efforts to promote PA through the built environment domain
- In sport and recreation settings, the Community Sport Infrastructure Resource Library provide a guide for the planning, design and construction of innovative, sustainable and fit-for purpose community sporting infrastructure. This includes a portal with resources to assist wit best practice design specification.

3.3.5 What other strategies intersect with this domain?

Based on the evidence in this review, governments are urged to use *all eight* of the identified *domains for best investment* to achieve the comprehensive strategic approach necessary to increase population participation in PA. There is great opportunity for synergistic effects from concurrent action in these domains.

The eight domains for best investment

1. Sport and recreation
2. Communication and public education
3. Transport and the environment
4. Urban design and infrastructure
5. Primary and secondary healthcare
6. Education
7. Workplaces
8. Community-wide programs

For example, communication and public education might be used in part to change awareness and attitudes about the links between urban design and health impacts and to improve an understanding of compact and mixed-use urban designs. This might in turn lead to a better-informed public, more interested in the way elected officials formulate policy in this area. Sport and active recreation organisations often use public open space and green space for their activities. These organisations may have a more significant role to play in maintaining and restoring these spaces to encourage more people to use them. The sector should prioritise improving access to public open space and green areas to ensure recreation facilities are appropriate for all age groups. This involves partnering with relevant stakeholders to ensure public spaces which could be used for PA are accessible, well maintained, safe and inclusive.

3.3.6 What are the implications for policy?

There are clear design principles for planning integrated regional and local land use and transport environments that encourage a mode shift, away from private car use and towards walking, cycling and use of public transport. Planners working at the regional and local level (along with the transport sector) need to work in a coordinated manner, to ensure interventions make the best possible contribution towards population PA and other important goals such as safety/injury prevention, road congestion, air pollution and climate emissions.

Key principles at the local level relate to providing easy access to a diversity of neighbourhood destinations and high frequency public transport, and connected street networks that include footpaths and cycling infrastructure. Local planners need to ensure that residential density (and therefore customer demand) is adequate to support the viability of local businesses and frequent public transport services that make AT attractive. At a regional level, planners can play a key role by providing an appropriate mix of employment opportunities across a region that are conveniently accessible by an efficient public transport network. Policy makers can help further strengthen the evidence base by partnering with researchers to conduct studies such as natural experiments that can evaluate the effect of changes to built environments or transport systems on people's health and behaviours. By collaborating with researchers, policy makers can help ensure research questions are relevant to policy and produce policy-informing findings that can be usefully disseminated and communicated to improve policy and practice.

Further resources and examples

Refer to the links listed under 'Urban design and infrastructure' in Appendix 5 for other useful resources and guidance.

Refer to Appendix 3 for some illustrative examples of policies, programs and other initiatives in Australia that relate to this domain (particularly those described under GAPPA 1.2, 1.4, 2.1, 2.2, 2.3, 2.5, 3.1, 4.1).

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3.4 The primary and secondary healthcare domain and physical activity

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3.4.1 How does this domain contribute to a more active society?

Primary and secondary healthcare providers can contribute towards a more physically active society by integrating physical activity (PA) counselling as part of routine care and treatment and supporting links with community-based programs and services.

PA promotion in primary care: Reducing chronic disease in Australia

Primary and secondary healthcare providers are at the forefront of direct, one-to-one provision of information, advice and support for PA in Australia. They also deal with the consequences of low PA, particularly chronic conditions. General practitioners (GPs) deliver the majority of primary care services, seeing 85% of the population each year. Patient surveys suggest that around 20% of people can recall discussing PA in a consultation with their GP in the past year.[1,2] While encouraging, there is scope for increasing PA advice and prescription in primary care, given its significant role in the prevention and management of the dominant causes of disease and disability in Australia (refer to Chapter 1.1). There is strong support for the integration of PA in clinical practice by the Royal Australian College of General Practitioners (RACGP)[3,4], Australian Medical Association[5], National Heart Foundation[6] and American Heart Association[7], as well as the Federal and State Departments of Health[8], and WHO[9].

Make Every Contact Count

In addition to GPs, other health professionals with a valuable role to play in the promotion of PA include practice nurses and nurse practitioners, as well as exercise physiologists, sport and exercise medicine specialists, Aboriginal health workers, physiotherapists and health educators, many of whom rely on referral from general practice (especially as part of Team Care Arrangements under Medicare). The Make Every Contact Count (MECC) framework[10] developed in England (Figure 25), shows there is scope to discuss PA in most encounters with patients and clients. The MECC framework describes four levels of PA intervention ranging from very brief awareness raising and information provision in routine primary care, to high intensity counselling, planning and support that may be offered by specialist practitioners.

Primary and secondary care promoting active living in the community

Primary and secondary healthcare providers can also make a significant contribution in support of community-based PA strategies. For instance, they can disseminate information, and provide signposting to PA opportunities available at leisure and aquatic centres, gyms, neighbourhood centres and other venues. There may be some barriers that affect this, such as practitioners' attitudes, perceptions about patient motivation and health literacy, consultation time pressures and concerns about program or service availability and accessibility.[11,12] Addressing these barriers is important to support greater awareness of PA opportunities among patient populations and likelihood of participation. Some of the strategies which may help address these barriers are covered in Table 17 (see Section 3.4.3). Furthermore, the professional bodies and health services that practitioners are affiliated with are important partners in advocacy efforts to bring about policy and environmental changes to support active living in communities.

Figure 25. Making Every Contact Count [MECC] as a behaviour change intervention

Source: Public Health England 2016.[10]

3.4.2 What is the supporting evidence?

There is a substantial body of evidence that the provision of PA advice and counselling through healthcare services is effective.[13] WHO identify these strategies as a 'best buy' for chronic disease prevention.[14] The range of behavioural change strategies that have been beneficial include:

- Verbal advice
- Development of behaviour change objectives
- Written prescriptions
- Provision of written materials
- Feedback.

Several reviews have reported that brief PA interventions have similar levels of efficacy to more intensive interventions involving multiple occasions of contact.[15,16] The synthesis of intervention evidence indicates that small to moderate increases in PA can be maintained for at least 12 months.[17]

The challenge remains to develop mechanisms to deliver these interventions at scale. Evidence generated in small scale trials may not produce generalisable results or be developed for scalability. Given the reach of the primary care sector, this remains a next stage challenge for the field.

Evidence from economic evaluation of the cost effectiveness of PA promotion strategies in healthcare settings also shows that brief advice for PA delivered in primary care is cost effective[18-20], particularly when the mental health benefits of increasing PA are accounted for.

3.4.3 What works? Infrastructure and program specification

The evidence shows that multiple communication, education and support strategies can help promotie PA in healthcare settings, including verbal advice, written prescriptions and self-help materials, among others. A recent review[15] specified how these elements can be incorporated into brief PA interventions, as shown in Table 17.

Table 17. Examples of communication, education and support strategies for brief physical activity interventions

Design feature	Examples
Health professional counselling protocols (counselling guidelines, key messages)	Structured protocols with clear and simple messages and processes (e.g. to assist health professionals with raising the difficult topic)
Written prescription and/or care plan	A 'written prescription' outlining PA goals and a plan for PA participation developed during the consultation may be a useful adjunct to verbal advice to increase PA
Follow-up	Follow-up sessions after the initial consultation may be important in achieving improvement in PA outcomes over longer timeframes (such as 12 months). Ensuring follow-up over an appropriate time period appears to be more important as a 'success factor' than the duration of individual counselling sessions
Directory of services	Knowledge of relevant PA opportunities and support services (e.g. having a current directory, database/reference file)
Specialist support staff	Availability of support and specialist staff (e.g. exercise specialist, physiotherapist, practice nurse, local PA service providers, sports clubs and organisations, walking groups). Communication arrangements to facilitate continuity of care and feedback to the referring practitioner

In addition to these intervention elements, success factors for the delivery of PA advice and counselling in routine healthcare have been identified[19], which are integrated into the 5As framework recommended by the RACGP for the provision of preventive primary healthcare.[4] These involve:

- **Asking** patients with an elevated risk of chronic disease (e.g. obesity, high blood pressure) about PA
- **Assessing** motivation, preferences, barriers and health literacy of patients, and using this to guide advice and support for PA
- **Advising/Agreeing** actions by providing information and recommendations that are simple, clear, specific, and realistic, negotiating goals and targets for PA and checking for understanding using 'teachback' approaches
- **Assisting** with change by applying insights from behaviour change theory, particularly goal setting, identifying internal motivators, building self-efficacy, promoting self-monitoring and encouraging social support for PA
- **Arranging** support by providing referral to allied health services or community programs and scheduling follow-up.

The encouraging evidence about the effect of PA interventions using wearable devices, such as pedometers and wrist worn activity monitors[11], and digital communication methods like text messages and websites, indicates that these technologies have considerable applicability to healthcare settings.[12,13] The potential applications are broad and relevant to supporting the 5As approach if used as part of PA assessment, monitoring (e.g. patient self-monitoring, alerts to clinicians if goals are not met), reminders, tailored education, and support. There is, however, a need to demonstrate how these intervention modalities can be integrated into healthcare delivery and to show how they can increase the adoption and maintenance of PA among clinical populations.

3.4.4 What are the recommendations for investment and action?

The global Exercise is Medicine movement has called for PA to be addressed as a vital sign in every patient visit to a healthcare practitioner.[21] Data shows that most patients are not advised about PA, even when they have relevant conditions such as hypertension or obesity.[2] Ongoing efforts need to be directed towards building clinician capacity and changing practitioner's behaviour so that they recommend PA more often. This can be facilitated by professional leadership, skill development, organisational change, financial support and partnerships between healthcare practitioners and providers of PA opportunities and specialist exercise support.

Leadership

Departments of health, professional associations and credentialing bodies of different healthcare practitioners, and non-government public health organisations have a vital role to play in increasing understanding that promoting PA is an essential and evidence-based component of health service provision.

The development and dissemination of consensus statements and practice guidelines will contribute to a shift in awareness and attitudes towards PA as an issue that is relevant to many areas of clinical care. Recent findings from a nationwide survey of GPs conducted by the RACGP revealed low usage of the organisation's *Smoking, nutrition and physical activity* (SNAP) guidelines.[22]

A long-term awareness and education initiative aimed at health professionals (such as the initiative launched in England as part of the Moving Healthcare Professional Project[23]) may be needed to elevate awareness of such guidelines and the role of PA in disease prevention and management.

Skill development

WHO's *Global Action Plan on Physical Activity 2018–2030* (see Appendix 4 for an overview) recommends embedding PA into pre and in-service training of health professionals to improve the knowledge, skills and confidence of healthcare practitioners to integrate PA promotion into service delivery.[9]

At the pre-service training level, foundational education in PA assessment, prescription and counselling should be provided within university courses (e.g. medicine, nursing, physiotherapy). It is recommended that this education introduce behaviour change models, incorporate practice-based learning experiences, and foster understanding of how PA is relevant to the personal wellbeing of health professionals as well as their readiness to address this issue with patients and clients.

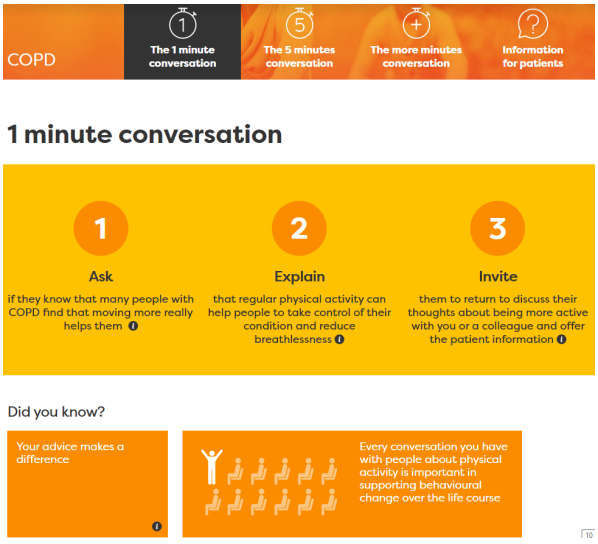
Further skill development and specialisation can be facilitated by the integration of PA promotion into the professional development programs available to health professionals. These can examine PA prescriptions for different health conditions, models of multidisciplinary care, and systems to support integration of PA into routine practice. Refer to the ***Case Study*** '***Moving Medicine***' below for an example of a professional development initiative in the UK that aims to support the integration of PA into routine clinical care, which is promising but not yet evaluated. The findings from the RACGP's recent survey indicate broad support among GPs for increased professional development to enhance confidence and skills to provide brief interventions and motivational interviewing, early intervention and preventive health advice, and improve whole-of-practice approaches to patient lifestyle change.[22]

Case study: Moving Medicine (UK)

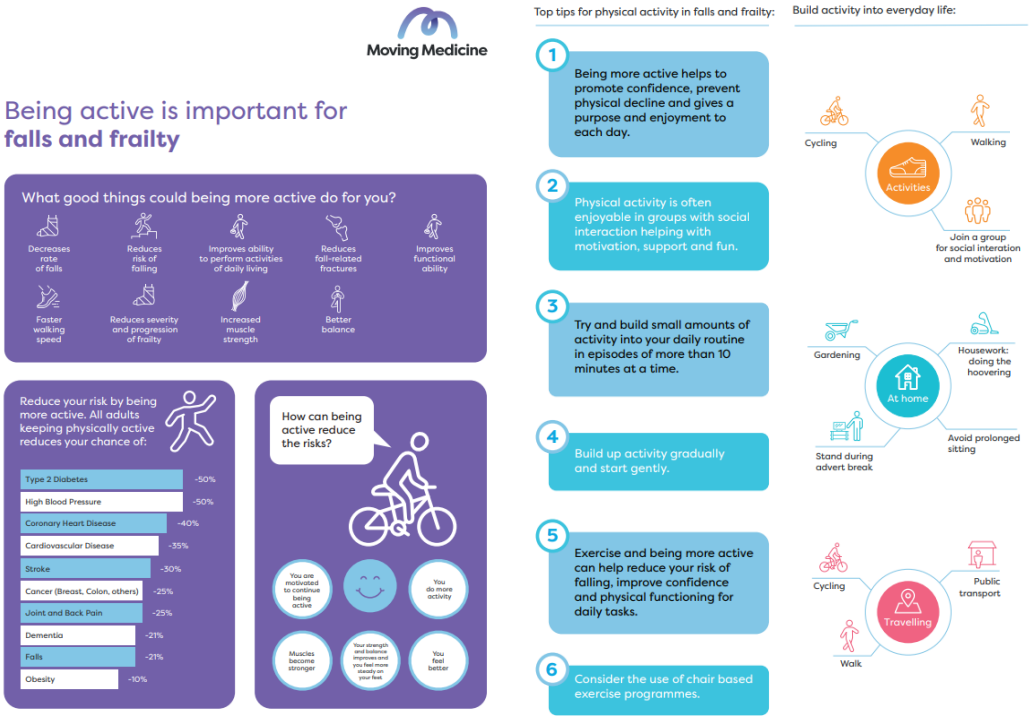
https://movingmedicine.ac.uk/

Moving Medicine is a new online platform developed by the Faculty of Sport & Exercise (FSEM) UK (governing body for Sport and Exercise Medicine in the UK) in partnership with Public Health England and Sport England which provides:[24]

- **Step-by-step online guides to counselling patients** with different health conditions such as pregnancy, cancer, dementia, depression, falls and frailty, and musculoskeletal pain. Guides are structured according to the 5As framework and adapted to the amount of time a clinician has available at the end of a consultation (i.e. one, five or more minutes)
- **An online toolkit for hospitals** to help patients be more active during and after their time in hospital
- **An online course 'Active Conversations'** which is designed to provide practical training to help clinicians have quick, effective and positive conversations with patients to encourage greater PA. The course is accredited with CPD points from the FSEM (UK) but also accepts enrolments from clinicians outside of the UK.



Example of one of the step-by-step guides for supporting brief conversations about PA with patients with COPD



Example of a patient resource for falls and frailty

Organisational change

Improvements in the quality and efficiency of PA advice and counselling will be facilitated by the development of practice systems that embed this into day-to-day service delivery. The adoption of guides, such as the RACGP's '5As Framework' can assist healthcare practitioners to take a consistent and comprehensive approach to addressing PA. Other enabling elements within practice systems include validated PA assessment tools, prompts to discuss PA in the management of relevant conditions (e.g. type 2 diabetes, obesity), forms for recording advice that is given, cues to follow this up in later consultations, and written information resources that can be given to patients and clients.[15]

General practices and other healthcare providers may be more likely to adopt enabling elements if they form part of the minimum data required to meet accreditation standards and the indicators in the Practice Incentives Program Quality Improvement (PIP QI) Incentive, a Federal Government scheme that rewards general practices for participating in certain quality improvement activities. Desktop software programs can provide a ready access point for these enablers of PA promotion. The inclusion of enabling elements in accreditation standards and the PIP QI Incentive can similarly be expected to increase the likelihood that software providers will incorporate these in practice software.

Financial support

The General Practice Management Plans and Team Care Arrangements, funded under the Medicare Benefits Scheme, have enabled the engagement of allied health professionals, such as exercise physiologists and diabetes educators, in more intense lifestyle interventions for patients with chronic disease. The PIP QI (mentioned above) is another scheme that could be used to incentivise general practices to incorporate quality improvement activities around PA.

The recent survey conducted by the RACGP reveals that GPs often refer patients needing comprehensive advice or more complex interventions to allied health professionals, highlighting the importance of maintaining these arrangements to support multidisciplinary engagement in PA prescription and support and intervention.[22] Government funding of resources and training opportunities for healthcare practitioners can improve their readiness and capacity to address PA within routine service delivery.

Partnerships

Communication and information sharing between healthcare practitioners and providers of PA facilities and programs, supports the signposting of patients and clients to these initiatives. Partnerships between health practitioners with specialist skills in exercise prescription (e.g. physiotherapists, exercise physiologists) and providers of different types of PA in communities may also assist the design and adaptation of these opportunities so they are suitable for individuals with particular needs and/or limitations.[25] This specialist input can increase the confidence of patients and clients who are signposted to these activities to participate, and support patients with achieving independence and self-management as they transition out of the health system into the community.[25]

3.4.5 What other strategies intersect with this domain?

The primary and secondary healthcare domain intersects with many of the *domains for best investment* in PA.

The eight domains for best investment

1. Sport and recreation
2. Communication and public education
3. Transport and the environment
4. Urban design and infrastructure
5. Primary and secondary healthcare
6. Education
7. Workplaces
8. Community-wide programs

Healthcare practitioners play a central role in the promotion of PA in the community. Their capacity to have reach and impact is influenced by the context in which they practice, linkages with PA services and PA programs and other opportunities in their locality. Significant intersections between primary and secondary healthcare and other domains within the PA system include:

- **Communication**: social marketing campaigns (incorporating mass media) about PA that could be led by Departments of Health in partnership with non-government public health organisations and professional associations such as the RACGP to:

  (a) Raise awareness among healthcare practitioners about PA as a public health priority

  (b) Generate knowledge among patients and clients that they can seek guidance on PA

  (c) Create a climate where it is easier for practitioners to initiate advice and counselling opportunistically

- **Community-wide strategies:** the involvement of healthcare practitioners within multifaceted community-wide PA interventions can add to the profile and credibility of these initiatives, in addition to directly assisting the significant segment of the population with whom they have contact to plan and adopt behaviour change. This includes signposting or referring patients to local community facilities and programs that promote PA for diverse population groups

- **Sport and recreation**: health practitioners can signpost to sport and recreation opportunities as a valuable way of assisting patients and clients to gain ongoing support for PA and is a pathway through which PA providers in communities can broaden their reach to inactive, higher needs individuals.

3.4.6 What are the implications for policy?

Health departments at state and federal levels, alongside non-government public health organisations, primary health networks and professional associations such as the RACGP, can lead the way in elevating the importance of PA as a critical component of routine clinical care. Guidelines for PA advice and support already exist for the primary care context.

- **The provision of PA advice and counselling through healthcare settings has been identified as a 'best buy for chronic disease prevention and a cost-effective strategy for promoting PA**

- **There is a spectrum of approaches that may be used to deliver PA advice and counselling, ranging from very brief interventions to intensive counselling and support from an exercise specialist**

- **Provision of PA advice in healthcare settings is currently limited in Australia. Policy makers have a key role to play in providing leadership and financial support for programs that can help elevate the importance of PA in routine practice, upskill the healthcare workforce, and build organisational capacity for delivering PA interventions**

- **An integrated approach involving all relevant organisations (government, non-government and professional associations), is needed to develop a sustainable model for PA promotion in health care settings.**

However, a sustained behaviour change campaign aimed at health professionals would likely help to increase awareness and their usage. Other recommended areas for investment include:

- Additional training opportunities and resources to build practitioner skills and confidence in delivering effective brief interventions and motivational interviewing
- Modifying the existing Medicare and PIP QI schemes to incentivise and enable more GPs to offer PA counselling as part of routine care
- Maintaining the existing General Practice Management Plans and Team Care Arrangements funded under the Medicare Benefits Scheme as they are enablers of a multidisciplinary approach to PA prescription.

Currently however, there is a fragmented approach to PA promotion in healthcare settings with many players involved including the RACGP, National Heart Foundation, Primary Health Networks and local, state and federal governments. Bringing all the relevant players together under an integrated approach will be necessary to develop a sustainable model for PA promotion in primary and secondary healthcare.

Further resources and examples

Refer to the links listed under 'Primary and secondary healthcare' in Appendix 5 for other useful resources and guidance.

Refer to Appendix 3 for examples of policies, programs and other initiatives in Australia that relate to this domain (particularly those described under GAPPA 1.4, 3.2).

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3.5 The communication domain and physical activity

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3.5.1 How does this domain contribute to a more active society?

Mass media campaigns are designed as organised purposive interventions using mass media communications to increase community awareness about particular health-related issues. Their role is to increase whole-community understanding, shape the agenda for change and to signpost a range of potential change options or information-seeking steps that could lead to health enhancing behaviours. Mass media campaigns can initiate the cognitive change process, influencing understanding and beliefs and then impact attitudes and behavioural intention. The final stage involves influencing health behaviours directly, with short-term behavioural trialling, or longer-term behavioural maintenance. They use mass-reach channels to access a large population or population subgroup.[1,2]

Standalone mass media campaigns are generally less effective than those that integrate with comprehensive efforts including environmental supports, regulation, and policy change across the prevention system.[3] For this reason, many have argued that mass media campaigns should be just one part of a broad social marketing strategy, which includes complementary policy and environmental changes.[1,4-6] What we term 'mass media-based social marketing campaigns' (MM-SMC) combine mass media with the right policy actions, programs/services/products and supportive environments.

There is compelling evidence that MM-SMC represent best practice, which WHO encourages member states to aspire to when designating MM campaigns as a 'best buy' for the prevention and control of chronic diseases.[7-10] Social marketing is an *integrative* approach that embraces Promotion (e.g. mass media campaign), Product (e.g. programs and brand), Price (e.g. financial cost, time/opportunity costs of activities) and Placement (e.g. social, commercial, digital, physical environments). The (not recommended) 'stand-alone' mass media campaign would represent only a limited subset of the 4Ps framework – in effect 'one P – promotion', which would result, at best, in increased community awareness of the issue. By contrast, the social marketing approach harnesses multiple strategies at multiple levels for synergistic impacts.[11,12] Increasingly, social marketing and mass media campaigns are incorporating social media either in conjunction with, or instead of, traditional channels.[13-15]

Thus far, the evidence indicates that relying exclusively on social media for campaign communications are premature, and none have been published in the PA arena. While new studies are emerging[16-19], not enough is yet known about the best strategic mix for campaigns using social media platforms.[20,21] As noted by the US Centers for Disease Control and Prevention:

> "*These platforms are complements to, not substitutes for, traditional mass media. Because data on the contribution of digital media efforts to reaching campaign goals are still emerging, evaluation of digital media efforts can help determine effectiveness and establish an evidence base*".[3]

Given the recency of social media approaches to health behaviour change, there is currently no evidence that social media alone can change behaviour. However, these methods are inexpensive, can be tailored to different audience segments, and are recommended as complements to, not substitutes for, traditional mass media.

3.5.2 What is the supporting evidence?

In the recent update of 'best buys' and other recommended interventions for the prevention and control of chronic diseases, WHO stipulates the following as a best buy (cost effectiveness analysis (CEA) ≤ INT$100 per DALY averted in low- and middle-income countries (LMICs)):

> *"Implement community-wide public education and awareness campaign for physical activity which includes a mass media campaign combined with other community-based education, motivational and environmental programs aimed at supporting behavioural change of physical activity levels."*[7]

The 'best buy' status afforded to public education and awareness campaigns by WHO is supported by several recent reviews[5,6,22,23], noting the need for improvements in campaign reporting research and research methods.

3.5.3 What works? Infrastructure and program specification

In their discussion of best practice in mass media campaigns, the FLOWPROOF protocol has been proposed, comprising nine key components of campaign implementation and evaluation, based on a synthesis of campaign evaluation and effectiveness data (Figure 26).[1]

For a newly developed campaign, it is generally held that planning for television should aim for individuals to be exposed to a message on three or more occasions. This is based on the concept of minimum effective frequency (MEF), meaning that selection of program placement should be guided by aiming for the largest proportion of the target audience exposed to the television commercial (TVC) three times or more in order for the TVC to achieve its maximum communication effect (this is a general rule of thumb, but an MEF estimation formula is discussed in detail by Rossiter[24]).

For reinforcement phases of an established campaign, particularly if the TVC content is quite emotive, the media buying plan may aim to maximise the proportion of the target audience reached 1+ times, i.e. buying to maximise reach without needing to achieve 2+ or 3+ frequency. This is also likely to require less investment over a given campaign phase.[3,25]

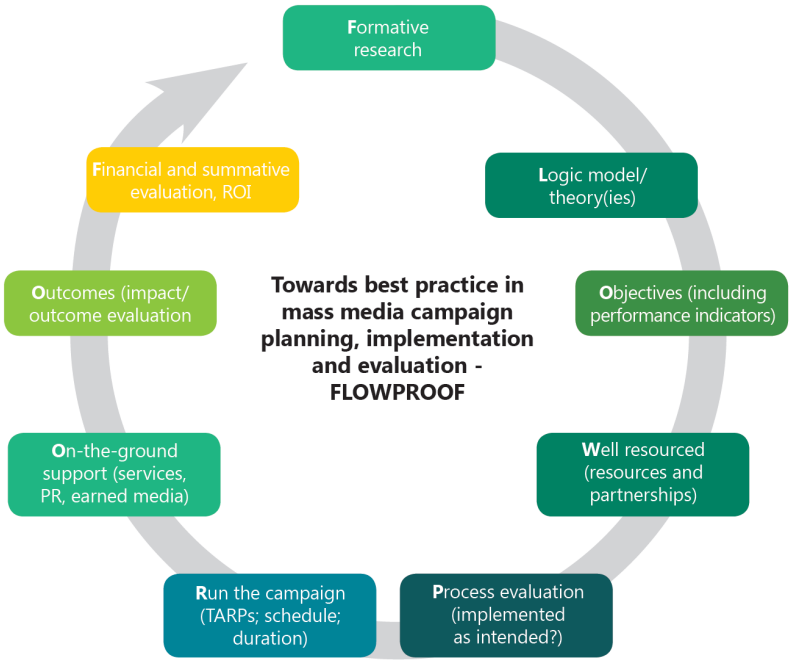

Figure 26. FLOWPROOF protocol for best practice in mass media campaigns

Source: Grunseit et al 2016.[1]

Tobacco control campaigns have a longer and more extensive history and research basis than other health issues such as PA. Using tobacco control as an approximate reference, the US Centers for Disease Control and Prevention have recommended an annual investment standard of US$3.10 per capita for statewide mass media campaigns.[3] For example, to meet this investment effectiveness standard for a NSW adult population aged 18-64 years would require annual investment of approximately A$6M.[a]

3.5.4 What are the recommendations for investment and action?

From their review of PA mass media campaigns in Australia[22], researchers set out the FLOWPROOF protocol (Table 18) together with nine key recommendations:

1. Campaigns should be part of an integrated, system-wide approach to chronic disease prevention
2. Campaigns and main messages should be consistent across Australia
3. Underpinning theory/logic models need to be made explicit and applied
4. Clear, measurable campaign goals and objectives should be specified
5. Linkages to broader strategies (beyond communication) should be further developed
6. Campaign duration and investment should reach a defined impact threshold
7. A campaign planning and evaluation protocol (e.g. FLOWPROOF) could contribute to better practice
8. Campaign evaluations should be made publicly available
9. Sustained campaign efforts over several years are required to achieve population impact.

Table 18. Design specifications for mass media campaigns to encourage a more active society

Design feature	Explanation and examples
Formative research	• Planning research to develop and test campaign themes, messages and communication elements, and assess the need for and feasibility of a campaign • May include epidemiological assessment, message design, formative testing and concept development • May use qualitative and/or quantitative approaches
Logic model/use of theory	• Explicitly identifies how the overall campaign is intended to work and whether one or more theories or frameworks (e.g. social cognitive theory, health belief model or hierarchy of effects model) is used to guide planning and evaluation
Objectives (including performance indicators)	• Defines target audience or audience segmentation • Specifies measures or indicators to assess campaign performance. For example, if a 'hierarchy of effects' model was incorporated, performance indicators corresponding to each level of hierarchy might be developed for categories such as awareness, specific message recall, knowledge enhancement, attitudinal change, confidence or intention to change behaviour, or behavioural trialling or maintenance
Well-resourced	Invests adequate resources (see per capita investment standard under 3.5.3) and builds necessary partnerships across sectors
Process evaluation	• Process evaluation answers the following research questions: (a) Did we implement campaign components as intended?

[a] Based on ABS population estimates for September 2015 and USD/AUD exchange rate of 1.27.

Design feature	Explanation and examples
	(b) What campaign elements did we implement that were: (i) Planned (ii) Opportunistic? • Process evaluation starts early, and in anticipation of tracking the unfolding campaign activities, is both scheduled and opportunistic. A standard reporting template for local implementation teams is a useful tool
Run the campaign	Implements the necessary campaign 'dose' i.e. media weight Target Audience Rating Points (TARPs)/Gross Rating Points, type of scheduling and duration to achieve defined reach effectiveness threshold
On the ground support	Deploy the infrastructure, services associated with the campaign, public relations and earned media functions to support effective implementation
Outcomes	• Ensures that campaign impact or outcome evaluation is conducted with optimal evaluation research design (ideally longitudinal analyses using a cohort design with comparison cohorts from regions unexposed to the social marketing and mass media campaign) and with the use of established reliable and valid measures and indicators to assess each component • Uses a systematic approach to share evaluation results with stakeholders
Financial and summative evaluation	Undertake an integrated summative and economic campaign evaluation, including breakdown of all costs incurred and returns on investment.

3.5.5 What are the recommendations for low-resource situations?

Low-resource situations describe where the financial, human or other resources for campaigns are less than optimal, or the timing is very rapid between commissioning and delivery of a campaign. Low-resource settings include low income countries, but also smaller or localised campaigns in a defined region or city, with relatively small campaign buying budgets. Defining optimal resourcing standards for MM-SMC is difficult, although the guidance for investment in tobacco control mass media campaigns is a possible reference point.[3] Those responsible for overall planning and budgeting may wish to consider whether they confine their investments to actions that they can afford to fund fully rather than risk wasting resources should an underinvestment in MM-SMC fail to reach a reasonable performance standard.

For those who believe they can achieve impact on a 'shoestring' budget, researchers have developed a 10-step A-to-J framework and guide to getting started with campaigns – the PRAGMMATIC (Practical Guidance on Mass Media Techniques In Countries) framework.[26] The steps are as follows: (1) Audience selection; (2) Build messages; (3) Choose channels; (4) Develop partnerships; (5) Enhance the campaign product; (6) Free up resources; (7) Generate publicity; (8) Heighten the highs; (9) Invent fresh content; (10) Join up strategies.

These 10 steps are illustrated in Figure 27 which is about *low-resource settings*. These include LMIC (as defined by World Bank classifications) and other lower resource situations (regardless of country classification) where the financial, human or other resources for campaigns are less than optimal. A low-resource setting is not necessarily synonymous with a low-income country/region. For example, a campaign might be implemented in a high-income country setting, but also be limited in resources at a given local implementation level.

Figure 27. PRAGMMATIC: 10 steps towards implementing best practice campaigns in low-resource situations

Source: Bellew et al 2020.[26]

3.5.6 What other strategies intersect with this domain?

Communication and public education that encourages people across the lifespan to engage in PA is one of the identified *eight domains for best investment* which are used as a central organising framework for this guide. Making use of all eight domains allows for the comprehensive strategic approach necessary to increase population participation. A designated 'best buy' in its own right, mass media approaches to communication and public education can also provide a communication umbrella across all domains, as well as the opportunity to develop a brand to strengthen the marketing platform (Figure 28).

Figure 28. Mass media can provide a communication umbrella across all domains

3.5.7 What are the implications for policy?

Mass media campaigns are important for raising population awareness and understanding about PA but must form part of an integrated strategy that ensures the right policy actions, programs/services/products and environments are in place to support changes in behaviour. This integrated approach is known as 'mass media-based social marketing campaigns' (MM-SMC).

We recommend that policy makers follow the FLOWPROOF protocol and accompanying recommendations (outlined in Section 3.5.4) when planning, implementing and evaluating mass media-based social marketing campaigns to promote a more active society. Key aspects of FLOWPROOF relate to:

- **Campaign development:** use of formative research and logic model/theory
- **Evaluation:** clearly defining specific and measurable objectives and performance indicators
- **Implementation:** adequate dosage and maintenance of the campaign to achieve impact
- **Resourcing and partnership building:** to support implementation and evaluation.

- **The FLOWPROOF protocol and accompanying recommendations (outlined in Section 3.5.4) are for implementing mass media-based social marketing campaigns**
- **For low-resource contexts the PRAGMMATIC (practical guidance on mass media techniques in countries) protocol is recommended.**

Where the FLOWPROOF protocol and recommendations cannot be followed (due to inadequate resources or highly restricted timeframes), policy makers should consider whether investments are better directed towards other actions that can be funded fully rather than risking underinvestment in (and consequently, marginal impact of MM-SMC).

If a decision is still made to run a campaign in this scenario, we would suggest following the PRAGMMATIC (Practical Guidance on Mass Media Techniques In Countries) Protocol – the 10 steps outlined in Section 3.5.5, as a guide to help maximise the use and availability of campaign resources and optimise impact.

Further resources and examples

Refer to the links listed under 'Mass communication and public education' in Appendix 5 for other useful resources and guidance.

Refer to Appendix 3 for some examples in Australia that relate to this domain (particularly those described under GAPPA 1.1 and 1.2).

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3.6 The community domain and physical activity

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3.6.1 How does this domain contribute to a more active society?

Ecological models highlight that patterns of physical activity (PA) in populations are influenced by determinants at multiple levels, including intrapersonal, interpersonal, organisational, environmental and policy factors.[1] This perspective provides the foundation for community-wide programs to promote PA, that use a mix of coordinated strategies to address the multilevel determinants of activity. Actions might include mass media campaigns, primary health care-based interventions, community participation or educational events, advocacy and environmental changes. According to Mittelmark: "*The term communitywide describes large-scale programs that are intended to involve many residents and the institutions of entire villages, towns or cities*".[2]

Community-wide approaches to tackling public health risks have been used extensively since the latter part of the 20th century[3], and there is a substantial knowledge base and numerous frameworks to guide how these are implemented. It is understood that each community is different from the next, with a unique set of assets among its people, places, services and networks. Consequently, community-wide PA programs are effective when they deliver evidence-based infrastructure and programs in the context of a given community, tailoring the investments to the assessed needs of that community, and harnessing local partnerships and strengths to create synergistic benefits. Systems thinking, and the method that it employs such as dynamic simulation modelling, can enable identification of critical determinants within communities and facilitate coordinated action by partner agencies to modify these.[4]

Community-level interventions can respond to local community opportunity, capacity and nuance. They may also be able to mobilise local partnerships and resources e.g. faith based; farm based; or culturally, geographically or climatically tailored to local need and across local communities.

3.6.2 What is the supporting evidence?

While there have been discrepant findings from systematic reviews[5,6], community-wide programs to promote PA have been strongly recommended by the United States Preventive Services Task Force[7], the WHO[8,9], the American Heart Association[10] and leading PA researchers.[11] The broad consensus about the benefits of these programs is premised on an understanding that they are a vehicle for coordinated, best practice action on the ecological determinants of PA. Further, there is good evidence to support the multiple constituent strategies that are usually incorporated within community-wide programs. These include social marketing and mass media[12], enhancements to the built environment and transportation systems[13], settings-based interventions in schools[14-16] and workplaces[17,18], education and counselling in primary and secondary healthcare[15,19,20] and individually-tailored health behaviour change programs.[21]

The available economic evaluations support the cost effectiveness of community-wide programs to promote PA. For instance, community-wide strategies to promote walking and the use of pedometers have been reported to have highly favourable cost effectiveness, calculated as the ratio of costs per person per day to MET-hours of PA gained per person per day.[22] Use of a simulation approach to model the cost per Quality Adjusted Life Year (QALY) gained from different PA interventions, based on estimates of the impact that that these would have upon disease incidence, has also found that community-wide strategies are cost effective.[23]

Overall, WHO identified community-wide programs as the most cost-effective approach to increasing PA in populations. It recommended that member countries:[8]

> "*Implement community-wide public education and awareness campaign for physical activity which includes a mass media campaign combined with other community-based education, motivational and environmental programmes aimed at supporting behavioural change of physical activity levels*".

3.6.3 What works? Infrastructure and program specification

Table 19 summarises the evidence-based components which can be used to build a community-wide program, with examples of each. WHO has stipulated the first two components (mass media campaigns, and primary and secondary healthcare) as 'best buys' overall[8], so that it is reasonable to suggest that these might be prioritised in selection component options to build a community-wide approach, however all of the design features shown are supported by scientific evidence.

Table 19. Design specifications of evidence-based components to increase PA through community-wide programs

Design feature	Examples
Community-wide campaigns using mass media, social marketing	• Promote PA by using television, radio, social media, newspaper columns and inserts, and trailers in cinemas • Incorporate multiple components from the other 'design features' below to build the community-wide approach
Primary and secondary healthcare program component options	• Risk factor screening and education • PA counselling • Individually tailored health behaviour change programs • Combined diet/PA programs for people at increased risk of type 2 diabetes
Family-based interventions	• Goal-setting tools and skills to monitor progress (e.g. website to enter information) • Reinforcement of positive health behaviours (e.g. reward charts or role modelling of PA by parents or instructors) • Organised PA sessions (e.g. instructor led opportunities for active games)
Settings-based program component options: education, workplace, sport	• Whole-of-school initiatives with adequate facilities and programs • Linkages between schools and wider community to increase PA opportunities • Creation of new or enhanced access to places for PA combined with informational outreach activities (e.g. sports voucher/incentive schemes) • Workplace-based programs to improve diet/PA and reduce weight • Point-of-decision prompts to encourage use of stairs • Transport access guides • Showers • Bicycle storage facilities
Environment and policy component options: combinations of transportation, land use, environmental design	• Urban greening strategies • Physical improvement to green space combined with a community engagement element that promotes the green space and reaches out to new target groups • Creation of new/enhanced footpaths and walking trails

Design feature	Examples
	• Campaign linked/branded signage for new/existing local footpaths and walking trails • Increase street connections to create multiple route options, shorter block lengths • Traffic calming, intersection design, street lighting and landscaping • Building codes and other local policies that minimise car parking • Expanded transit services, times, locations and connections • Bus stops accessible ≤ 400m; rail stops accessible ≤ 800m from homes • Bicycle systems, protected bicycle lanes, trails • Safe routes to school
Technology-based distance interventions	• Incorporation of activity monitors to increase PA in adults with overweight or obesity • Mobile text messages, emails or websites for people with established chronic diseases • Telephone-based coaching services

It is further recommended that community-wide programs with these design features adopt an assets or strength-based approach which encourages individuals from within the communities to lead and facilitate co-production and delivery of programs, and services. Recognising the unique assets in communities, during planning and implementation of programs using existing capacity and resources in communities increases a program's effectiveness. This approach has been adopted within the Active Living by Design (ALbD) Community Action Model, which provides an evidence-informed ecological framework for increasing active living in communities using integrated and multilevel, cross-sectoral strategies, with an intentional focus on health equity (Figure 29).[24,25]

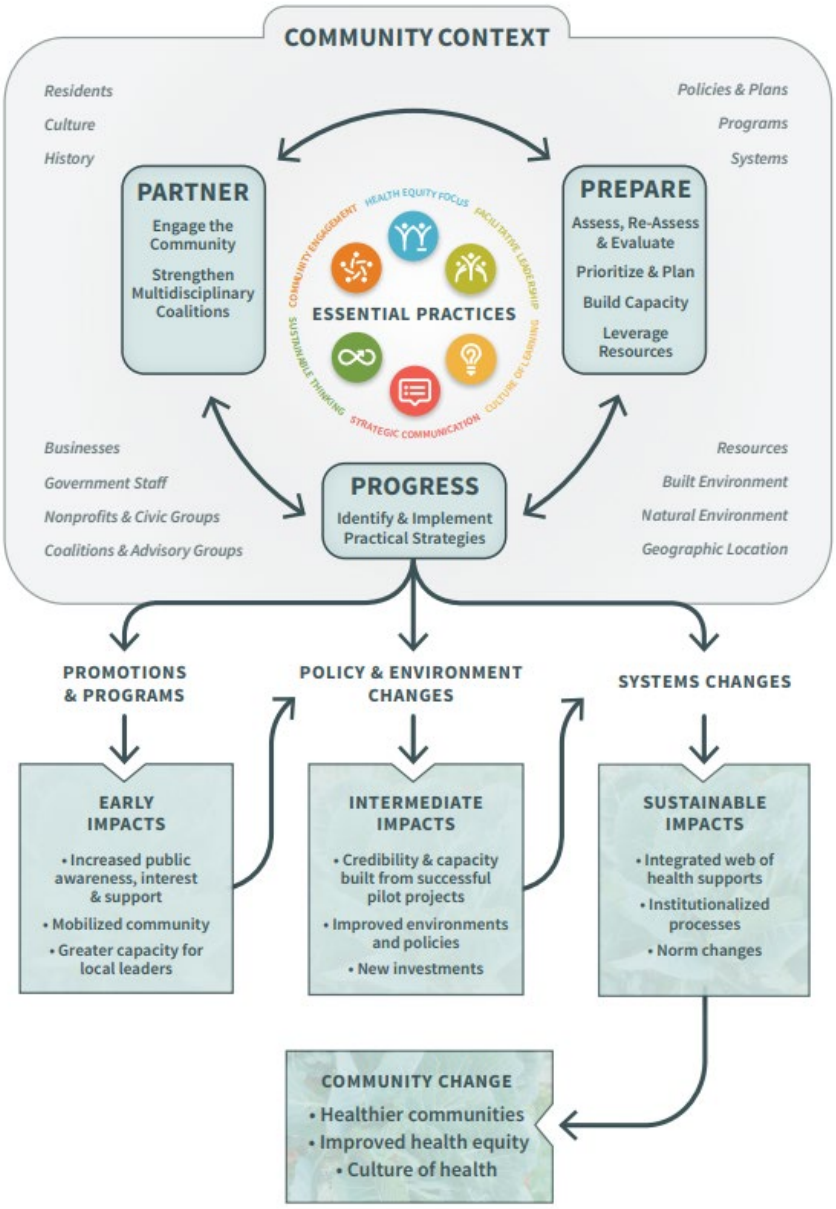

Figure 29. Active Living by Design (ALbD) Community Action Model (updated in 2016)

Source: Stasi 2019.[26]

This model, which can be best understood by following the arrows from top to bottom, is based on six essential practices for producing meaningful and sustainable change in communities. These practices, which are positioned in colour at the centre of the top part of the model and summarised in Table 20, underpin all stages of the model. The model uses a 3P Action Cycle consisting of the iterative stages of partner, prepare and progress to deliver actions in relation to promotions and programs, policy and environment changes and systems changes that are appropriate to the community context, thereby improving community health outcomes.[26]

Table 20. The six essential practices of the Active Living by Design Community Action Model

Essential practices	Details
Health equity focus	Intentional focus on reducing health disparities in communities by addressing social, economic and environmental inequities
Community engagement	Intentional process of empowering community members to authentically engage in and contribute to the planning and implementation of solutions within their own communities
Facilitative leadership	A capacity building and management approach that shares power and influence among engaged partners
Sustainable thinking	Considers the social, environmental and economic assets and opportunities needed for successful and lasting community change
Culture of learning	Embeds ongoing opportunities in the community to improve effectiveness and impact through partnerships, continual assessment of initiatives and collaborative sharing and learning
Strategic communication	Goal-driven method of communication that aligns messages and strategies with communities' priorities and values, adapts to evaluation results and aims for evolving dialogue

Source: Stasi 2019.[26]

3.6.4 What are the recommendations for investment and action?

Community-wide PA programs should be strongly supported by government and non-government agencies as a vehicle for multilevel strategies that can be adapted to local contexts and achieve levels of implementation and engagement necessary for population-level behaviour change. State and national agencies can assist these efforts by supporting capacity building, intersectoral collaboration, and coordination with whole-of-population strategies.

Capacity building

Evidence, case studies, and models for community-wide PA promotion should be disseminated to organisations that can provide leadership in these programs at the local level, particularly regional health authorities, local councils and sport and recreation bodies. Provision of training in methods such as systems mapping, co-design and collective impact will foster skills and shared understandings that support coordinated and collaborative action.

Intersectoral collaboration

Collaboration with community-level organisations that play an important role in the provision of infrastructure and programs for PA at the community level, including those in the education, transport, planning and sport and recreation sectors, will be enabled when this takes place under the aegis of state or national commitments by these organisations to address this issue. The development of high-level policies and programs across these sectors, therefore, will support their involvement in community-wide programs at the local government and regional levels. Other community-wide initiatives are developed exclusively within a city or municipality, and generate an 'Active Community X' program of work, occurring predominantly at that local level (e.g. Active Launceston[27] – see Appendix 3 (under GAPPA area 3.6)).

Coordination with whole-of-population strategies

While community-wide programs should be contextually relevant and make use of local assets, these can be supported by alignment with strategies and use of resources that have been developed to promote PA at the state or national level. These include mass media messages and materials, guidelines for urban design and transport planning, and behaviour change strategies and resources designed for use in healthcare, education and other settings.

3.6.5 What other strategies intersect with this domain?

Community-wide programs, by their nature, may intersect with all of the other domains for PA promotion that are addressed in this document. Mass communication, improvements to the built environment, and education delivered in workplaces and/or healthcare settings form the mainstays of these programs, but other combinations of strategies may be used depending on local needs and resources. Furthermore, community level action has a valuable role to play in reaching and supporting socially disadvantaged people, who are likely to experience greater barriers and fewer opportunities for PA in the contexts in which they live (see Chapter 4 for further information).

The eight domains for best investment

1. Sport and recreation
2. Communication and public education
3. Transport and the environment
4. Urban design and infrastructure
5. Primary and secondary healthcare
6. Education
7. Workplaces
8. Community-wide programs

3.6.6 What are the implications for policy?

Given the local and regional nature of community-wide PA programs, the clearest implications are for local government bodies which may find the ALbD Community Action Model useful for understanding the principles and practices for effective program development and delivery for more active communities.

The formulation of strategies that comprise community-wide programs will depend on local needs and should be developed using an assets or strength-based approach that encourages community engagement.

Systems thinking can enable local governments, their partners and the community to identify the critical determinants affecting PA in the community and facilitate coordinated action to address these. Public health agencies at the state and national level also have an important role to play, particularly in supporting capacity building at the local level, and provision of supporting investments and infrastructure.

- **Community-wide programs, by their nature, involve a mix of strategies across multiple domains to address the multilevel determinants of PA for that community**
- **The identification, development and implementation of suitable strategies should be adapted to local needs, harness local assets (resources, partners), and engage community members**
- **Government and non-government public health agencies have a role to play in supporting community-wide PA programs.**

Further resources and examples

Refer to the links listed under 'Community-wide programs' in Appendix 5 for other useful resources and guidance.

Refer to Appendix 3 for some illustrative examples of policies, programs and other initiatives in Australia that relate to this domain (particularly those described under GAPPA 1.1, 1.2, 1.3, 3.3, 3.4, 3.5, 3.6).

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3.7 The workplace domain and physical activity

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3.7.1 How does this domain contribute to a more active society?

At different life stages, some settings are of greater or lesser significance in terms of their potential to reach a large proportion of the population. Workplaces are one such setting because they capture much of the adult population. Over 12.2 million Australians in the 15–64 years age group were estimated to be employed at the beginning of 2019. In addition, the national participation rate was at near record high levels for this population at 78.2%.[1] Further, the gap between male and female participation rates in this age range was less than 10 percentage points, at 82.9% and 73.5% respectively, continuing the long term convergence of male and female workforce participation. These data indicate the importance of the workplace setting for the 15–64 years age group as a platform for interventions and programs to improve health and wellbeing overall and especially through the potential to nurture a more active society.

Forecasts indicate a smaller working population will need to support the rising healthcare and social welfare costs of an ageing Australian labour force in the coming decades.[2] Current Australian Government policies aim to encourage employers and employees to maintain workers' physical and mental wellbeing to enable long term and productive participation in the labour force. Reaching workers through the workplace setting is one way towards achieving better health[2,3], while delivering numerous other potential benefits for organisations and employees (Table 21).[4]

This potential is contingent on the availability of effective, affordable and sustainable interventions and programs that can be scaled to achieve population reach; a considerable challenge given the significant proportion of workplaces that are small (44% of all Australian workplaces in 2017–18) and which experience greater difficulties implementing workplace programs.[5,6]

Table 21. The potential benefits of health promotion in the workplace setting

Benefits to the employer organisation	Benefits to the employee
✓ Well-managed health and safety program	✓ Safe and healthy work environment
✓ Positive and caring image	✓ Enhanced self-esteem
✓ Improved staff morale	✓ Reduced stress
✓ Reduced staff turnover	✓ Improved morale
✓ Reduced absenteeism	✓ Increased job satisfaction
✓ Increased productivity	✓ Increased skills for health protection
✓ Reduced healthcare / insurance costs	✓ Improved health
✓ Reduced risk of fines and litigation	✓ Improved sense of wellbeing

Source: Adapted from WHO 2018.[4]

3.7.2 What is the supporting evidence?

A recent review of health and wellbeing in the workplace setting has reported on: (i) evidence of effectiveness; (ii) essential program components; (iii) implementation success factors; and (iv) the influence of organisational factors, leadership, systems, policies, culture and work design.[7] There is strong evidence that lifestyle management interventions as part of workplace wellness programs can increase healthy behaviours such as PA. These effects are sustainable over time and are clinically meaningful but their potential for workforce-wide impact is constrained by limited reach (i.e. a small proportion of workers is reached by programs), challenges associated with attempts to scale up evidence-based workplace programs and attenuated effectiveness at scale (i.e. programs become much less effective when scaled up). There is also evidence of effectiveness for interventions to prevent type 2 diabetes and to tackle obesity/overweight in the workplace; however, interventions vary substantially in their effectiveness. The greatest weight loss was achieved only through intensive lifestyle interventions (that is, at least four months in duration) that implemented a structured, established program. By contrast, weight reduction was minimal among less intensive interventions, and/or those that did not comply with the specifications of the established model. Further, more work is needed to refine efforts to address socioeconomic inequalities in obesity. The review noted the prominence of PA as a research theme in the workplace setting, especially in the decade to 2017 and cited 20 important publications since 2011 alone.[8-27]

A substantial body of literature supporting workplace PA interventions exists, exemplified by a recent systematic review of reviews which found high quality evidence of positive health effects of workplace health promotion initiatives that target PA.[28] According to a stakeholder-centred synthesis, short, simple exercise or fitness programs have the strongest evidence of positive impacts on work related outcomes in general workers and could provide similar benefits to more complex and expensive interventions.[23] Participation in workplace team sport is also a promising strategy with improvements in individual health (perceptions of health, vitality, fatigue at work), group (improved social interactions) and organisational (work performance) outcomes.[24] Similarly, group-based interventions targeting PA in shift workers also show moderate evidence of effectiveness.[29] Effective interventions included components such as competitive group activities, the use of free resources (e.g. fitness trackers), and feedback from an instructor. Tailoring for individual fitness levels was also noted as necessary for effective engagement.

The evidence further indicates that multilevel or multicomponent workplace interventions are effective for increasing PA and reducing sedentary behaviour (SB).[7,30-32] The *Moving to business* (MTB) study in Finland[30] noted some compensatory effects, whereby employees' leisure (outside of workplace) PA levels decreased slightly but not enough to undermine the overall positive impact on total PA.[30]

The Bellew review also reported moderate strength evidence in support of a systems approach (generically) to health promotion in the setting, noting also that five major international and national health agencies (US Centers for Disease Control and Prevention, WHO, National Institute for Occupational Safety and Health, National Institute for Health and Care Excellence, Workplace Health Association Australia) are consistent in stipulating leadership and workplace culture very prominently within the recommendations in the frameworks and models which they promote.[7]

Feltner and colleagues[31] reviewed the effectiveness of Total Worker Health (TWH) interventions which take an integrated approach to promoting worker health and wellbeing by combining occupational health and safety, injury prevention, and hazard minimisation efforts in the workplace. While they found only some evidence of effectiveness of TWH interventions for decreasing sitting time in office workers, they identified characteristics of effective integrated interventions which involved co-designing, planning and implementing multicomponent programs.

The participatory approaches to intervention design and implementation ranged from inviting target worker groups to provide input during the planning and implementation phases, to creating joint management-employee advisory boards.

Altogether, the current evidence base supports a multilevel and systemic approach to the promotion of PA and reduction of SB in the workplace setting which is consistent with the current WHO 'best buy' recommendation. Nonetheless, more research on the effectiveness of specific actions or combinations of actions implemented at different levels will help to refine our specifications and recommendations in the workplace domain.

The benefits of workplace interventions can also be hampered by poor implementation, despite their promise.[33] There are limited studies examining the effectiveness of varying implementation strategies for workplace health promotion programs, including those targeting PA.[34]

The available evidence suggests that the trialled strategies (e.g. educational meetings, tailoring interventions to a specific workplace, and consensus processes) have little to no effect on the long-term effectiveness of the programs. Implementation science research is required if we are to understand the most effective ways to scale up workplace PA interventions, allow for flexibility and adaptation of effective interventions so they can be readily adopted and widely implemented while preserving acceptable levels of effectiveness. Better reporting of contextual influences, such as organisational culture, participant demographics, leadership support and workplace policies, will help to address gaps in knowledge about implementation.

3.7.3 What works? Intervention and program specification

The evidence reviewed in this report allows for clear specification of interventions and programs in the workplace which are designed to contribute to a more active society (see Table 22).

Table 22. Design specifications for policies and programs to increase physical activity in the workplace setting

Level of intervention	Examples to increase PA	Examples to reduce SB
Organisation	• Include workplace health in the strategic plan • Engage occupational health staff and nominate a wellbeing team for PA promotion • Offer health risk assessments or similar screening • Use targeted approaches (high-risk, tailored) as well as universal • Provide incentives (including financial) to motivate participation for hard-to-engage workers and for defined outcomes (e.g. to use one hour working time per week for PA) • Provide exercise equipment for shared use • Develop a shared bicycle scheme for work-related travel • Strategically locate office printers to increase daily steps • Develop interactive interventions to encourage staircase use instead of lifts (e.g. smartphone prompts, use of gamification, team-based challenges) • Build/update locker rooms, showers, bike storage facilities • Organise PA day/s, team sports events	• Provide staff with sit-stand desks • Provide standing desks in meeting rooms and collective spaces
Work unit/ department	• Organise weekly group exercise or instructed PA breaks • Offer talks on wellbeing including PA • Hold walking meetings, or introduce activity breaks during meetings • Promote active commuting to work	• Hold stand-up meetings, or remind and encourage standing as an option during meetings

Level of intervention	Examples to increase PA	Examples to reduce SB
Individual	• Include conversation on PA and wellbeing in individual development discussions • Offer individual PA counselling based on screening assessments • Provide email messages and information on increasing PA	• Include PA and sedentary lifestyle behaviours in a 'work-life balance' component of Staff Development Reviews • Model the behaviour

SB = sedentary behaviour

The ***Case Study*** below provides an example of a free workplace health promotion initiative in NSW that aims to reduce chronic disease risk among workers by helping them make small changes to their lifestyles and to support businesses to create healthier workplace environments.

Case study: Get Healthy at Work program (NSW)

www.gethealthyatwork.com.au

The ***Get Healthy at Work*** program is a free workplace health promotion initiative that aims to reduce chronic disease risk among workers by helping them make small changes to their lifestyles and support businesses to create healthier workplace environments. Get Healthy at Work offers free tools, resources and support to address these priority health areas:

Smoking / Healthy eating / Physical activity / Active travel / Alcohol consumption / Mental wellbeing

Get Healthy at Work comprises two related pathways

1. Healthy Lifestyle Checks

A free and confidential health check completed by workers either online or with a trained health professional at the workplace or over the phone. It offers immediate feedback about an individual's health and their risk of type 2 diabetes, heart disease or mental ill health. It also offers advice on how to make changes for better health, with referrals to lifestyle coaching programs and other health services.

2. Workplace Health Program

Provides tools and resources for workplaces (examples below) to put together a simple online Action Plan to address a priority health area at the workplace. The program is available online with telephone support from the Get Healthy at Work team. Workplaces have the option of completing both pathways, or just one depending on the needs and resources of the workplace.

Get Healthy at Work resources

Get Healthy at Work fact sheet

A fact sheet that describes the Get Healthy at Work program

Download

***Get Healthy at Work* next steps email**

An email template to outline to senior leaders the next steps of the Workplace Health Program

Download

Manager engagement email

An email template to request the participation of senior leaders

Download

***Get Healthy at Work* presentation**

A PowerPoint presentation to support the business case and outline the high-level commitment required

Download

CASE STUDY VIDEO: The Lido Group

3.7.4 What are the recommendations for investment and action?

A recommended investment

WHO recommends the implementation of multi-component workplace PA programs in its updated 2017 guidance on '*Best Buys and other Recommended Interventions*'.[35] This is consistent with the supportive recommendation of the US Community Preventive Services Task Force.[36]

Design and implementation specifications are clear

We know what to do – the evidence allows clear specification of the interventions which can work; these are set out in Table 22.

Evidence of cost effectiveness accumulating

The review conducted by Lewis et al[37] found that workplace PA interventions were cost-effective or even cost-saving, however other reviews have been inconclusive.[38] It is important, going forward, to raise the standards of quality and consistency of workplace wellness economic research which has to date been very variable.[7]

There is promising evidence that even higher returns on investment could be achieved in programs incorporating newer approaches such as telephone coaching of high risk individuals together with the use of financial incentives; more research is required in these new areas.[7] Linked telephonic lifestyle coaching services (such as Get Healthy at Work) and clinical chronic disease support services were noted among the fastest growing components in Australia and New Zealand; however there have been challenges in achieving widescale uptake by workplaces.

3.7.5 What other strategies intersect with this domain?

As noted in other sections, *all eight identified domains for best investment need to be leveraged concurrently* to configure the comprehensive strategic approach necessary to increase population participation in PA.

The eight domains for best investment

1. Sport and recreation
2. Communication and public education
3. Transport and the environment
4. Urban design and infrastructure
5. Primary and secondary healthcare
6. Education
7. Workplaces
8. Community-wide programs

For example, workplaces can encourage active travel by providing end of trip facilities, limiting on-site parking, and allowing flexible working hours that facilitate off-peak travel. Transport and urban planning strategies play a complementary and synergistic role, for example creating safer pedestrian and cycling environments around workplaces can enhance the effectiveness of workplace programs to promote active travel. Team sports which are linked with workplaces also provide multiple benefits both for organisations and individuals.[24] However, the key message is that *all* the other strategies intersect synergistically with this domain.

3.7.6 What are the implications for policy?

The workplace is an important setting for PA policy because it allows access to much of the adult population. Implementation of multicomponent workplace PA programs can make an important contribution as one part of a more comprehensive approach. Policy makers play a central role in enabling the prioritisation of health promotion in the workplace by sponsoring or endorsing programs, delivering and/or providing resource support and financial incentives for adoption.[5]

Government-backed or delivered programs need to be supported by evaluation of the implementation process, with particular regard to the contextual factors (including enablers and barriers) that affect program delivery. This will enhance understanding of how programs can be adapted to local contexts while still delivering effective outcomes for PA. Health economic data indicate that workplace PA interventions are cost-effective or even cost-saving; it remains important to further evaluate this aspect of program performance.

It is possible that higher returns on investment can be achieved in programs incorporating newer approaches such as telephone coaching of high-risk individuals together with the use of financial incentives; more research is required to be definitive here.

- **Evidence for the workplace domain supports a multilevel and systemic approach to the promotion of PA and reduction of SB**
- **This policy position is supported by WHO recommendations in the updated 2017 guidance on 'Best Buys and other Recommended Interventions' and by the recommendations of the US Community Preventive Services Task Force**
- **Leadership and workplace culture that is supportive of health (including PA) feature prominently in recommendations of major international and national health agencies.**

Further resources and examples

Refer to the links listed under 'Workplaces' in Appendix 5 for other useful resources and guidance.

Refer to Appendix 3 for some illustrative examples of policies, programs and other initiatives in Australia that relate to this domain (particularly those described under GAPPA 1.4, 3.3).

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3.8 The sport and recreation domain and physical activity

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3.8.1 How does this domain contribute to a more active society?

A preliminary note about the Australian sport system and political structure

The sporting ecosystem within Australia is a complex and multilayered operation at federal, state or territory, and local authority levels.

Federally, *Sport Australia* is responsible for overseeing the implementation of national policy, population monitoring, the development of sport participation and the distribution of funding to *national sporting organisations (NSOs)*.

Many (mainly Olympic sport) NSOs and their respective *state sporting organisations (SSOs),* receive funding from Sport Australia to increase sport participation and maximise elite performance.

At a state and territory level, government departments have general responsibilities for sport and recreation development and participation, along with local government.

In 2018, the Australian Federal Government released a national sport based strategy (*Sport 2030 – National Sport Plan*; see summary of this Plan in Appendix 1) which includes the aim of reducing the number of physically inactive Australians by 15% by 2030,[1] thereby aligning a participation sub-component of sport policy with the WHO targets, and the Global Action Plan for Physical Activity.[2] National policies have also permeated the policies of NSOs, with many setting themselves ambitious participation targets as part of their strategic plans while also experimenting with new game formats and/or participation strategies.[3]

Sport has traditionally focused on competition and elite performance. This has begun to change as increasing evidence of the wide-ranging health benefits of MVPA has highlighted the potential of sport to contribute towards health enhancing PA.[4,5] In Australia and internationally, there is a considerable shift in sports participation towards less competitive, less structured, shorter and more social formats, which can be more easily incorporated into community lifestyle.[6-8]

Unlike the situation in Europe, sports *clubs* are not necessarily the main choice for participation in sport or PA in Australia. For example, 10-year trends in sport and recreation participation levels indicate that while leisure time PA has slightly increased, sport participation has remained steady.[9] Sports organisations are confronted with the challenge of configuring and scaling up the programs and support needed to boost participation in social sport.[10]

3.8.2 What is the supporting evidence for sport and population physical activity?

The recommendations for policy action and investment encourage sport systems, policies and programs to promote a 'sport for all' model that redefines sport to focus on its broad benefits for physical and mental health, and social and community outcomes (see Chapter 1.1 Benefits) and promote participation across the life course.[2] Figure 30 shows physical literacy and participation in PA/human movement across the life course; within the life course movement choices will include participation in community and/or elite sport. People who meet the PA guidelines for Australians do so not solely through sport, but through a mixture of activities and these

choices/motivations change throughout the lifespan and for different types of activities. Figure 31, in showing the percentage of the population across the life course participating in sport (2016) and meeting age-appropriate PA Guidelines (2018), also shows the room and need for improvement in these rates.

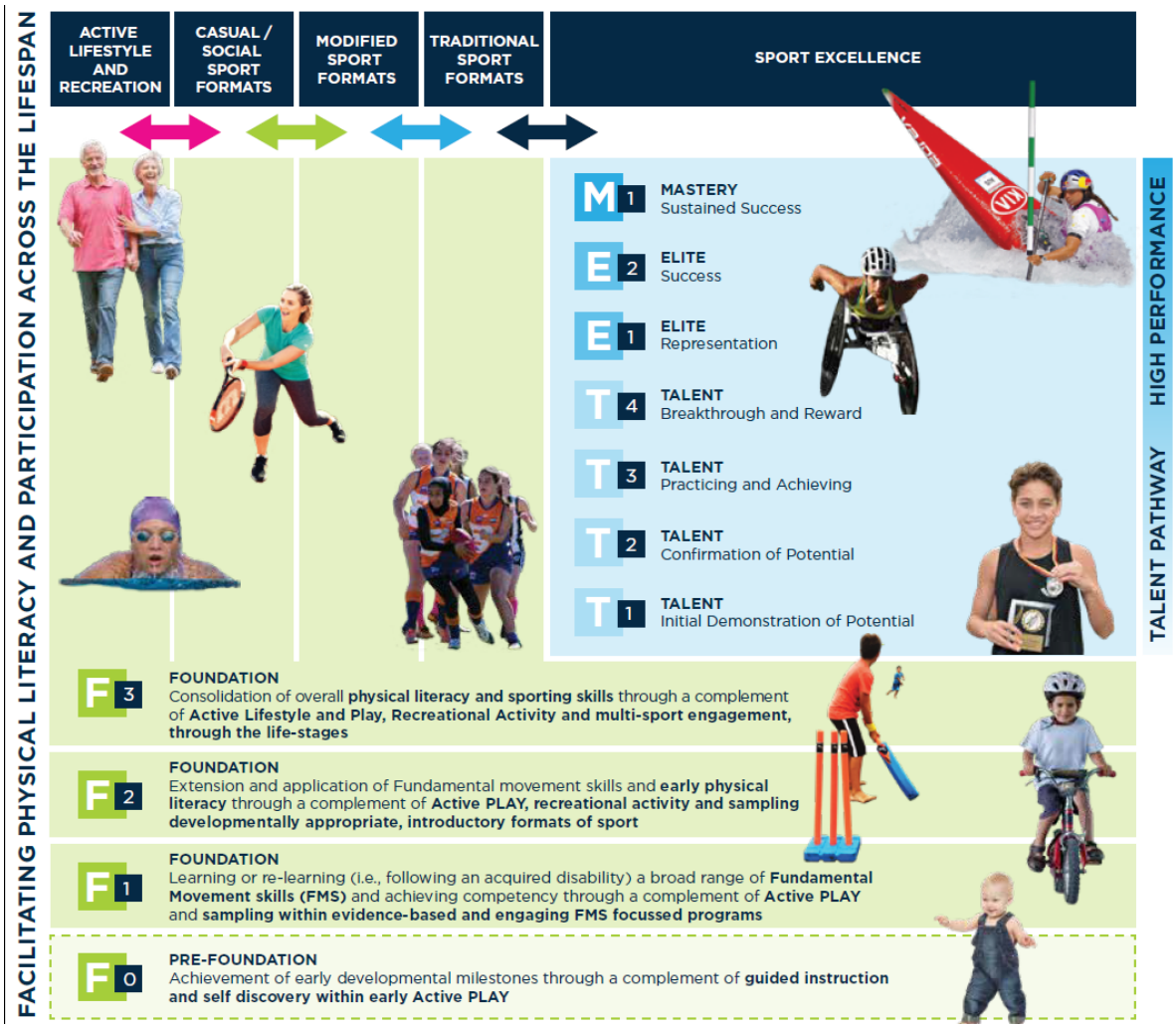

Figure 30. Physical literacy and participation across the lifespan

Source: FTEM participant framework (2019).[11]

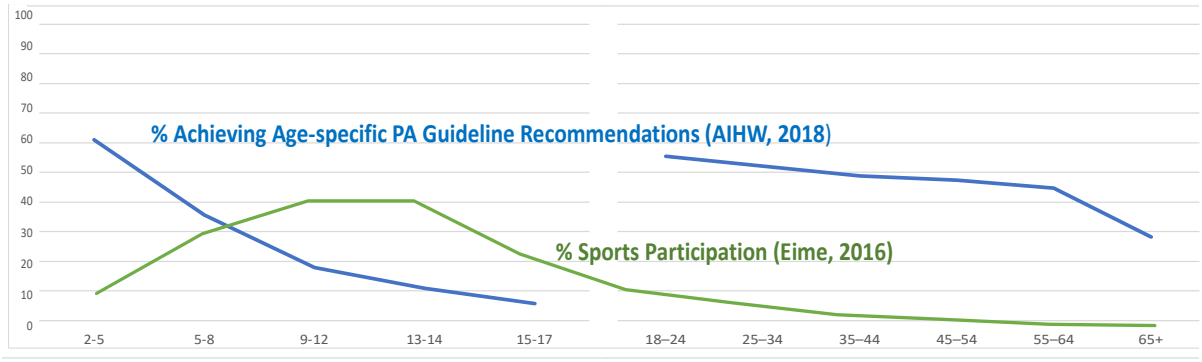

Figure 31. Proportion of the population across the life course participating in sport (2016) and meeting age appropriate PA guidelines (2018)

Source: AIHW Physical Activity across the Life Stages (2018)[12], and Population levels of sport participation (2016)[13].

It is important to note that there are gender and socioeconomic differentials in sport and active recreation participation (see Chapter 1.2 Participation rates, trends and social disparities). For example, female sport participation and retention in sport programs beyond early adolescence remain an ongoing challenge.[14] Community-level sports facilities, programs and infrastructure need to be part of the strategies to redress gender inequity in sport.[15]

There is a need for multi-strategic ecological approaches to promote PA into which sport programs can fit. This indicates the need for change at various levels of the sports governance system. One central strategy may target participation in non-traditional sports or other recreation and PA programs in traditional sports settings.[10] There are some concerns, however that the current sports club model (volunteer dependent) does not have the capacity to accommodate this broader approach; many sports clubs are already struggling to accommodate females, and volunteers primarily manage the 'core of sports clubs' which is the more traditional competitive model.[15,16]

In line with the emerging market segments, sports organisations are adapting their traditional offerings and repositioning their participation strategies to attract new audiences including individuals who may be less active. At the state and territory level in Australia, there are some clear examples of efforts to reposition the sport system. In one example, the Victorian Health Promotion Foundation (VicHealth), a statutory authority focused on promoting healthy lifestyles, has invested to encourage new participants into sport through community-wide social marketing, and through new, non-traditional social sport products redesigned to target insufficiently active members of the community (see ***Case Study – Doing Sport Differently (VicHealth)***). In another example, the New South Wales government committed more than A$207 million in 2017–18 for the ***Active Kids*** program – a universal voucher program reducing the cost of sports registration and membership through the provision of a A$100 voucher.[17]

One approach to maximise the impact of participation-oriented innovations in sport and active recreation is to focus on specific groups which are insufficiently active. Given large population segments targeted, this could influence inactive population groups to do a little more PA.[18] Ooms et al developed a checklist for implementing sporting programs in organised sport settings which target inactive people, but it will be a challenge for the sport sector to achieve this at scale[19], not least because of the capacity issues of volunteers in the current model, as noted above.[15,16] There may be a need to consider innovations in the approach to develop programs for the insufficiently active, but perhaps still using sporting club infrastructure. Paid professionals, local council employed staff, health insurance companies and private providers could arguably play a role. Some considerations are outlined below.

The modification of traditional sporting delivery

Sporting organisations face the challenge of responding to changing trends in activity choices, with individuals favouring less organised, non-competitive structured forms of PA. The challenge is to modify and adapt traditional

sporting offers to attract new less active population groups, such as older adults or those with existing chronic disease. An international example is the Scottish Football Fans in Training (FFIT) lifestyle program which uses settings for elite football to engage overweight middle-aged men. [20] This program has been effectively scaled up through Europe with the multicountry European Fans in Training (EuroFIT).[21] An adapted version of this program is currently being trialled in Western Australia in the context of AFL (www.aussiefit.org/).[22] These kinds of programs require further testing and development in the Australian context.

Between 2015–2018, VicHealth invested in the redesign, implementation and evaluation of social sporting offers products.[10] In-depth analysis of the challenges faced by sport highlighted the need to understand their own organisational capacity to deliver culturally appropriate and social products, as well as leverage partnerships to develop and sustain products for new audiences. Increasing registration and attendance at sports clubs does not make it certain that an individual is being more physically active. Policy developments need to focus specifically on increasing PA through sport, and to ensure that program coaches and supervisors or other providers are suitably trained towards this end[23-25]. It should be noted that delivery of quality activities in the sport setting which develops an 'individual's physical literacy' (see Chapter 3.1 Education) and fitness requires support and training for coaches and supervisors.

Sports clubs as settings for health promotion

Sports clubs as a setting for health promotion has been recognised for three decades since the 1986 Ottawa Charter.[26] Early Australian efforts focused on delivering public health messaging at sponsored events[27], with the attention turning to sports clubs creating health-promoting environments. The focus on sports participation through sporting clubs and organisations reflects the strong social, community and cultural role that sport plays globally.[28] Sport clubs may bring people together and increase social capital within communities.[29]

A more recent review of the social responsibilities of sports clubs and their role in health promotion found that while opportunities were plentiful, it was not something that a sports club did automatically, and cultural shifts within sporting organisations were needed to make health and wellbeing more central to their core business.[16] The *primary responsibilities* of these clubs are sport participation, creating a safe and inclusive environment and ensuring the club is economically and legally sound. The research found that clubs had modest resources, limited capacity to go beyond their core business and do not currently perceive it as their role to embrace the wider concept of 'health promotion'.[16]

Volunteers and mega-sporting events

Frequently, we hear that *"volunteers are the life blood of sport"*. Volunteers are those who consciously use their time to support organisations within the community for no monetary return. More specifically, volunteering may be defined as "*provision of unpaid help willingly undertaken in the form of time, service or skills, to an organisation or group, excluding work done overseas*."[30] Grassroots volunteers contribute to the social and economic capacity of sport and sporting clubs in Australia. Volunteers may also be participants in sport, with greater potential for social and wellbeing benefits over and above those of volunteering itself.[31] Some volunteer recreational initiatives, such as Parkrun (a free 5km timed walk or run in local parks on Saturdays mornings in 22 countries globally) are emerging with their global network of 'high-vis heroes' exceeding 370,000.[32]

The potential for community mass events, staffed by volunteers, may have a role in increasing community PA. These local events are more likely to increase activity than mass spectator events such as the Olympics or other international sporting competitions. The mass spectator events show limited evidence of impact on PA levels.[33,34] It remains for these mega-events to improve planning for, and integration of community PA programs into the pre-event phase, several years before the actual mass sporting event occurs, if they are to contribute to improvements in population PA participation rates.[35]

Case study: Doing Sport Differently (VicHealth, Victoria)

www.vichealth.vic.gov.au/media-and-resources/doingsportdifferently

The Victorian Health Promotion Foundation (VicHealth) and La Trobe University have developed resources based on six key principles to guide the design and delivery of sport-based programs that target people who are less active. The web-based toolkit highlights these six principles and provides high level guidance to build the capacity of the sports sector to create participation opportunities. The initiative is designed to support organisations through four phases of implementing a new 'social sport' participation opportunity or adapting an existing one.

"*Social sport is less structured than traditional sport. It has fewer rules and more flexibility but is more structured than active recreation activities. Social sport can be designed and delivered by an organisation (e.g. state sporting association), sport club, local council or other individuals and groups. Social sport places a greater emphasis on fun, social interaction and enjoyment than on performance, results and competition*" (VicHealth).

Sport stadia

Sport stadia are an important setting for reaching large numbers of people and for promoting and communicating broad public health messages, yet many are still incorporating fast food advertising and outlets, alcohol and tobacco promotion. An international example in which an attempt was made to challenge this is the 'healthy stadia' movement, which started in the UK and Europe from 2005. An audit of policy and practice in this area across 10 European countries (2013) found that sport stadia remain an underused setting for health promotion. [36]

Sport for Development

'Sport for Development' refers to using sport, in its broadest sense, to contribute to specific development objectives in low- and middle-income countries (LMICs) e.g. health, social, economic, inclusion, as captured in the Sustainable Development Goals (SDGs). [37] The Kazan Action Plan is another important tool for aligning international and national policy in the fields of physical education, PA and sport with the United Nations 2030 Agenda; the plan addresses the needs and objectives identified in the UN Action Plan on Sport for Development and Peace. These concepts are of greatest relevance for LMICs.[38]

An example of Sport for Development is the Australian Government's 'Pacific Sports Partnerships' (PSP) program which provides support for sport in Pacific Island countries in our region. Currently, the PSP supports 13 sports across six countries.[39] This funding is used to strengthen sport administration and programs although evidence to date for the effectiveness of sport in targeting Sport for Development outcomes is mixed.

3.8.3 A specification of potential interventions for the sport and recreation domain

The table below describes potential interventions for increasing population level PA participation in the sport and recreation domain.

Table 23. Potential interventions for the sport and recreation domain

Intervention	Design specifications
Sector-wide strategic approaches	• Paradigm shift for broadening definition of participation beyond just sport club participation, to include participation as a strategic goal • Consistent terminology and standardised targets to promote unity and comparison
Sports settings	• Organisations develop and deliver innovative social sport products for new audiences including insufficiently active groups and for women and girls • Build capacity to develop a skilled workforce, harness the power of volunteering, to ensure appropriate and inclusive delivery • Shift to social sport; informal, flexible options delivered by skilled personnel who can foster inclusive and positive experiences • Community sports settings and stadia could become environments for health promotion and building stronger communities
Use the complete continuum of sport	• Recognise the unique characteristics throughout the sporting continuum, from elite athletes being role models, to Sport for Development in LMICs and grass roots community participation
Major events	• Pre-event planning including PA programs; sustained investment and legacy that has PA and sport participation targets; partnerships essential between sport and other sectors to enable this

Intervention	Design specifications
Infrastructure	• Design guidelines for new facilities • Inclusive and welcoming environments that foster community participation
Volunteers	• Increase volunteer capacity and scope; focus on community programs that recognise their potential contribution to PA

3.8.4 What are the recommendations for investment and action?

It is important to apply multisectoral (cross-agency) approaches to support sport and recreation's delivery of PA programs. This will require systemic changes to the culture and strategic reach of sport and recreation, within the complex ecosystem of the federated Australian sporting system and with political support. New activities, modifications to traditional sporting programs and targeting of new audiences are essential; however, the capacity of sport to deliver new programs requires attention which may involve identifying other workforce to deliver programs.

Sport has the potential to broaden the participation base through enhanced understanding of the needs of target audiences and programs tailored to reach specific population segments, including inactive, women and girls, culturally and linguistically diverse and Aboriginal and Torres Strait Islander communities, all within a consistent standardised set of metrics. Inclusiveness and gender equity are key outcome indicators of these changes in the sport policy landscape.

Tasked with this paradigm shift, the sport and recreation sector will need to be supported to enhance the capability and capacity of their workforce and harness the power of volunteers. Policy congruence and linkages between sport and recreation and other sectors are essential and could be facilitated by the national policy released by Sport Australia (*Sport 2030 – National Sport Plan*; see Appendix 1 for a summary of this Plan).

3.8.5 What other strategies intersect with this domain?

Cross-sectoral engagement, systems-wide responses and changes within the sport and recreation sectors are all prerequisites to support a paradigm shift in sport that upholds population level PA as a strategic goal in its own right. As noted in other sections, this involves leveraging the other *identified domains for best investment:*

The eight domains for best investment

1. Sport and recreation
2. Communication and public education
3. Transport and the environment
4. Urban design and infrastructure
5. Primary and secondary healthcare
6. Education
7. Workplaces
8. Community-wide programs

For example, the communication and public education domain can be leveraged to help reshape community perceptions about sport participation being the primary domain of the elite participant, and to develop inclusive campaigns that can help attract inactive groups to new or modified sport or social offerings. Sports stadia provide potentially valuable settings for broadcasting and enhancing the reach of public health messages such as those promoting PA. There are intersections with the education domain, with schools and other institutions providing key settings for the delivery of physical literacy programs and potentially, facilities for community sport and recreation.

The urban design and infrastructure domain is also relevant for the development and improvement of sporting facilities, infrastructure and their accessibility to support inclusive participation regardless of gender, cultural background and ability.

Finally, the sport domain offers substantial opportunity to influence the design and delivery of community-wide programs that promote PA, particularly among less active population groups such as older people or those with existing chronic disease.

3.8.6 What are the implications for policy?

The sports sector has taken steps in some jurisdictions towards repositioning the sport system. This is in response to shifting demand away from organised or traditional sporting formats and the recognition that social sport offers an important opportunity for increasing population level PA, while expanding sport's participation base and attracting new audiences.

Ambitious participation targets have been set at the national level. To achieve these targets, a paradigm shift is needed within the sport sector to develop and deliver new, modified and/or more flexible offerings needed to appeal to less active groups while maintaining the engagement of existing participants throughout their life course.

A recent review (*Active and Inactive Young Australians*) has examined barriers and enablers of participation in PA (including sport and active recreation) among children and young people aged 3–18 years, living in Australia. It offers five strategic principles and a series of policy recommendations for consideration by all Australian governments.[10]

- **There is an urgency to develop standardised and sustained surveillance of sport, PA and sedentary behaviour in all Australian states and territories and at the federal level**
- **Sports systems, policies and programs need to promote a 'sport for all' model**
- **Five strategic principles are suggested:**
  - **(i) Human movement life course continuum**
  - **(ii) Intersectoral approach**
  - **(iii) Life course approach**
  - **(iv) Whole-of-society benefit**
  - **(v) Whole-of-system approach**
- **10 priority policy options have been recommended for Australian governments (see below).**

The key strategic principles identified in this review are: (i) Human movement continuum; (ii) Intersectoral approach; (iii) Life course approach; (iv) Whole-of-society benefit; and (v) Whole-of-systems approach.

Although focused on younger Australians, the *10 policy options* set out in this review are of great importance and have applications across the life course and to the system as a whole. These policy options are set out on the next page.[10]

10 policy options set out in Active and Inactive Young Australians

i. Develop standardised surveillance of sport and PA and sedentary behaviour in all Australian States and Territories and at Commonwealth level; monitor population participation rates of Australians in human movement, including: (i) age-specific guidelines for recommended PA; (ii) sport; and (iii) active recreation

ii. Develop a long-term investment strategy to implement the Australian government *Drivers of Participation* and *Physical Literacy* Frameworks

iii. Support early intervention preschool programs for 3-5-year-olds to build Fundamental Movement Skills (FMS) and for primary school aged children to consolidate and strengthen FMS acquisition

iv. Evaluate a pilot program of specialist primary school physical education teachers, in coordination with high schools as appropriate, across the three sectors (Government, Independent and Catholic)

v. Provide incentives to boost the delivery standards of physical education (PE) in Australian schools; in particular, encourage more schools to achieve the recommended standard of children and adolescents being physically active for at least 50% of allocated PE time, as recommended by Australian experts, US Centers for Disease Control and Prevention and the UK Associations for Physical Education

vi. Provide targeted support to support the teaching of PE for schools in disadvantaged areas

vii. Promote membership of and participation through sports clubs, social sport and enjoyable PA activities to older Australian adolescents as they transition to adulthood; ensure that the products and services meet the needs and interests of these young adults

viii. Develop family-based policies and interventions taking account of recent evidence on the effectiveness of these approaches

ix. Redress inequity in participation, including initiatives to address the financial barriers to participation in sport such as voucher schemes

x. Ensure program research and evaluation is used to support the goals of Sport 2030 (including, when developed, the national PA strategy); conduct specific evaluation studies to determine the effectiveness of newly introduced policies and programs.

Source: Active and Inactive Young Australians.[14]

Further resources and examples

Refer to the links listed under 'Sport and recreation' in Appendix 5 for other useful resources and guidance.

Refer to Appendix 3 for some illustrative examples of policies, programs and other initiatives in Australia that relate to this domain (particularly those described under GAPPA 1.4, 2.4, 3.1, 3.3, 3.4, 3.5).

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4. Addressing inequity to increase participation among socially disadvantaged groups

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4.1 What is the supporting rationale for increasing participation among socially disadvantaged groups?

As described briefly in Chapter 1.2, people who are affected by circumstances that place them at greater disadvantage in terms of access and ability to participate in PA, including poverty, gender, disability, Indigenous status, ethnic background or rural location (or the intersect of these factors), show disproportionately higher levels of physical inactivity in Australia. These forms of disadvantage not only contribute to greater chronic disease risk, and decreased life expectancy[1-4] but also reduce opportunities to experience the psychological and social benefits associated with PA participation. These include mental and emotional wellbeing, community belonging[5] and, among young people, teamwork skills, school attendance and academic achievement.[6,7] Research suggests that the largest health gains are derived from inactive individuals becoming more active (Figure 32).[8] Addressing efforts towards encouraging and supporting even small increases in activity in inactive individuals (which disproportionately include socially disadvantaged groups) could benefit population health and lead to broader community and economic gains. Part of this involves allocating resources according to need to differentially improve inequalities in PA, so that those experiencing greater social disadvantage are able to increase their activity levels to a greater extent than those who are more advantaged and already active.[9]

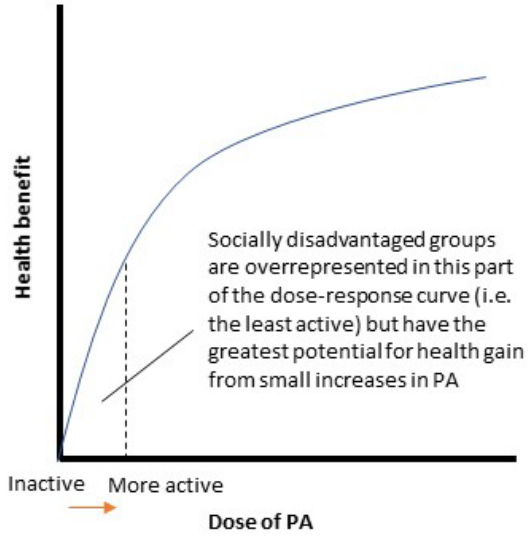

Figure 32. The dose response associated with increasing physical activity among those who are least active

Disparities in PA participation largely reflect inequities in opportunities for PA, in terms of access to safe, accessible, affordable and appropriate spaces and places to be active.[10] For example, some low socioeconomic status and rural communities have less access to quality open space, well-maintained facilities for sport and recreation, and regular and reliable public transport services. In addition to environmental barriers, there are obstacles associated with sociocultural norms and lack of social support, economic factors (e.g. financial constraints, inflexible working

hours), perceived or real risks to safety, and individual factors associated with motivation, self-efficacy, perceived barriers and PA history and skills.[10,11] For instance, people living with disabilities may experience barriers due to discrimination and discouragement, through the attitudes of service providers and the wider community, as well as limited availability of accessible facilities and inclusive activities.[12,13] Being of female gender may interact with other aspects of social disadvantage to exacerbate PA disparities. For example, women of Muslim background may be discouraged from participation by inflexible dress requirements, unsuitable activities or facilities, and lack of family support for PA.[14,15] Similarly women with disabilities who seek to participate in sport and recreation settings may be subject to dual barriers, from disability and gender discrimination.[16]

For Aboriginal and Torres Strait Islander peoples, traditional active lifestyles were forever disrupted by the dispossession associated with European colonisation in the past two centuries.[17] As a consequence, PA became a separate Westernised concept[18], rather than a traditional holistic activity, and sedentary lifestyles became common. Among Aboriginal and Torres Strait Islander peoples today, individualised health behaviours like PA can be viewed as being for personal benefit, and of lower priority than activities carried out for collective, family or community benefit.[19] Intergenerational trauma since colonisation and subsequent dispossession, poor treatment, exploitation and cultural fragmentation have contributed to current social disparities and marginalisation experienced by Aboriginal and Torres Strait Islander peoples.[20,21] Socioeconomic disparities also contribute towards inequalities in the opportunities that Aboriginal Australians have to be active.[22]

Addressing disparities in PA is a key underlying principle of GAPPA and is endorsed as a policy priority because it is consistent with Australia's commitment (together with other UN member nations) to reduce health inequities across the life course and valuing health as a universal right. It also contributes towards empowering and promoting social and economic inclusion, ensuring equal opportunity, and reducing health and social inequalities.[23] Events such as the Annual Aboriginal Rugby League Knockout Carnival in NSW have for example, facilitated important social and cultural benefits to Aboriginal and Torres Strait Islander communities.[24] This multiplicity of benefits to individuals and broader society provides a sound rationale for focusing on the most inactive and investing resources appropriately to address disparities in PA and health outcomes.

4.2 How do the different domains contribute to increased physical activity among socially disadvantaged groups?

Effective responses must prioritise policy actions that address the barriers which limit the opportunities and abilities of priority groups to be active, while protecting and enhancing those factors which enable and encourage participation.[23] This requires a combination of upstream approaches targeting wider socioecological conditions (including societal values, economic factors and physical environments) and downstream approaches targeting individual knowledge, attitudes and behaviours.

Opportunities for PA include structured activity that may occur as part of participation in community programs and organised sport and recreation, and incidental and unstructured PA associated with active transport (AT) and use of natural and built environments. Potential strategies to promote PA therefore span multiple sectors including sport and recreation, urban design and infrastructure and transport and environment. Efforts should be directed at settings and providers that are most likely to engage with disadvantaged groups such as social, faith based and other community services, schools, primary care, and local government. Strategies to increase safe, accessible, affordable and appropriate opportunities for PA, also need to be linked with targeted and appropriately tailored public education campaigns and programs to raise awareness and knowledge of these opportunities and related health and other benefits, shift dominant social and cultural norms related to PA, and promote uptake of available opportunities.

Where possible, the goals and objectives of policies to promote PA in socially disadvantaged groups should be aligned with the agendas and core business of other sectors that may already support certain subgroups, to improve their engagement and contribute to program implementation.[25] See the next section for the types of policy approaches that can be adopted by each domain to reduce inequities in PA.

4.3 What are the recommendations for investment and action?

A comprehensive PA policy should aim to reduce PA inequity and increase population-level PA; the two goals are not mutually exclusive.[26] It follows that targeted and universal strategies can be complementary and build on each other. Broadly, there are four types of policy approaches which can help to reduce health inequities, which are described in Table 24 for the purposes of illustrating their application to PA.[27]

Table 24. Typology of four policy scenarios to reduce inequity, categorised according to focus of reduction and extent of benefits, illustrated by physical activity relevant examples

	Focus of inequity reduction	
	Gap	**Gradient**
Benefits to subgroups		
Selective	1. targeted approaches which focus on improving PA among the most disadvantaged groups *e.g. PA programs that are created for particular sub-groups*	2. redistributive policies which are not expected to confer any benefit to the most advantaged groups *e.g. means-tested discounted rates for accessing sports and recreation facilities*
Universal	3. universal approaches that contain additional actions aimed at closing the gap between the most disadvantaged and most advantaged groups *e.g. increasing the overall availability of quality greenspace, concentrating most of them in disadvantaged communities*	4. proportionate universalism, where actions are universal but delivered at a scale and intensity proportionate to the level of disadvantage. Two main types: (a) universal policies that allocate proportionately greater resources to sub-groups with greater needs *e.g. needs-based allocation of investment in urban renewal programs to improve neighbourhood walkability* (b) universal policies have the effect of benefiting those who are less advantaged to a greater extent than those who are more advantaged, but without making any special provisions for disadvantaged groups *e.g. flat-rate sports vouchers that have the effect of subsidising a greater proportion of PA participation costs for lower income vs higher income families*

Source: Adapted from Benach et al 2013.[27]

Examples of policies and strategies that can be used to address social disparities in PA, as informed by the literature and reports of good practice, are shown in Table 25 below (see end of 4.1.4). These are organised according to the 'best investment' domain and GAPPA priority that they align with and can be seen to fall across a range of approaches outlined above. There is no single policy type that is 'best'; determining the most appropriate response will depend on the potential effectiveness and efficiency of the proposed solutions for any given context.[27] Such decisions can be guided using principles of 'subsidiarity', i.e. through engagement with the level of government or organisations that are closest to understanding the needs of particular communities or subgroups (typically, local governments and non-government organisations).[28]

Policy actions should address equity over the life course, recognising the cumulative effect of past experiences, attitudes and social, cultural and economic factors on PA throughout life, as well as the needs of groups across different stages of their life.[29] In general, positive patterns and experiences with PA should be established as early as possible to enhance the chances of these being sustained later in life and throughout key transition stages.[29] An overarching principle for the development of strategies to address inequity in PA is the importance of co-design – the process of engaging individuals and communities to actively participate in the planning, design, governance and delivery of policies and interventions that affect them.[23,30,31] Purposeful planning and community engagement with disadvantaged populations is required to avoid perpetuating health inequities associated with infrastructure investments that may attract those who are already active and have greater socioeconomic advantage.[32] The Active Living by Design (ALbD) Community Action Model provides an evidence-informed ecological framework for increasing active living in diverse communities using integrated and multilevel, cross-sectoral strategies, with an intentional focus on health equity (for further details about AlbD, see Chapter 3.6 – Figure 29 and Table 20).[33,34,35]

It should be noted that in facilitating engagement in socially disadvantaged communities, it is important to make it as easy as possible for engagement to occur, as community members may not have the skills, knowledge and social networks to participate through the usual structures and processes. This requires working with community and non-government organisations to identify and address barriers to involvement, use appropriate methods of communication, and provide support for people to get involved.[31] Further guidance can be obtained by referring to resources such as Public Health England's '*Guide to community-centred approaches for health and wellbeing*' which outlines a range of practical and evidence-based, community-centred approaches broadly grouped according to the following distinct strands although in practice, elements of each approach can be combined (Figure 33).[36]

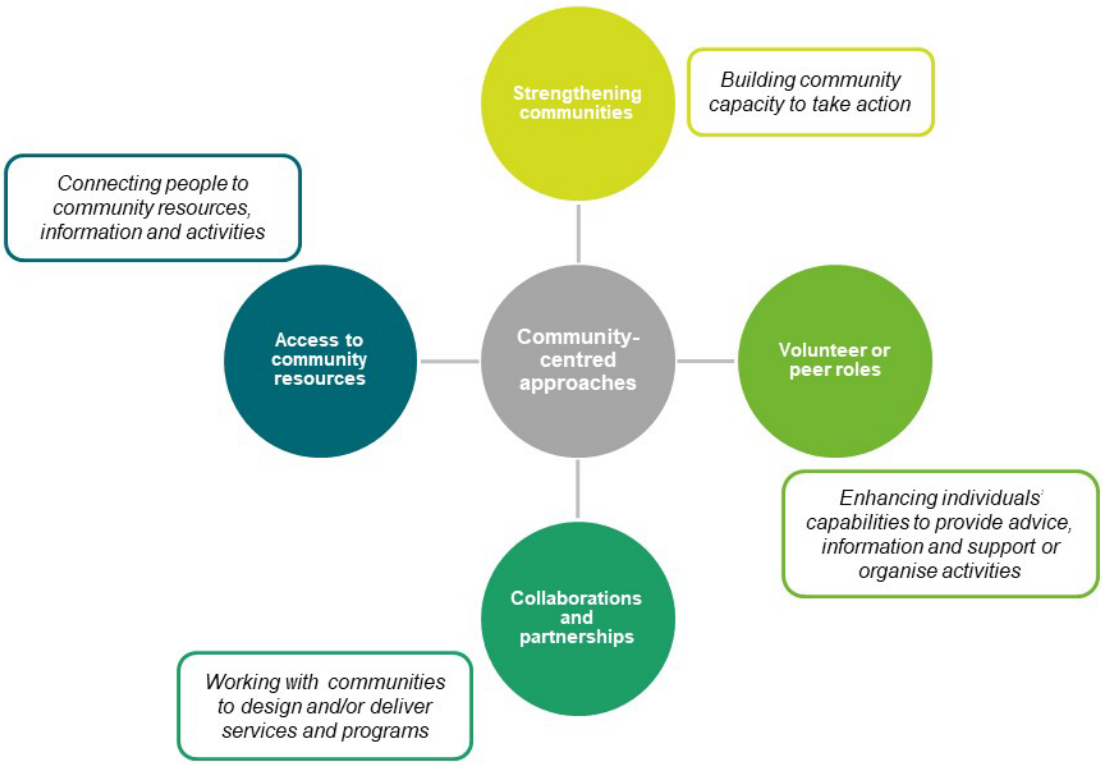

Figure 33. Community-centred approaches for health and wellbeing

Source: Adapted from Public Health England 2015.[37]

Co-design and participatory approaches are particularly important in the Indigenous context, not only to afford due respect for Indigenous knowledge and processes[37,38], but also because community engagement is a critical determinant of the effectiveness of health programs for Aboriginal and Torres Strait Islander peoples[39,40] and key to closing the gap in health outcomes between Aboriginal and non-Aboriginal people.[41,42] The NSW Knockout Health Challenge is one example of where a community-led approach has been used to develop an effective weight loss and healthy lifestyle program model for Aboriginal communities.[43] Some practical tips and frameworks are available that may assist policy makers to effectively and respectfully engage in co-designing PA initiatives with Indigenous communities.[37,38]

Alongside and in support of these actions, there is the need to continue strengthening the evidence base around effective strategies for increasing PA participation among priority groups. This requires surveillance measures that can provide data about the availability, accessibility, quality and usage of PA opportunities, spaces, and places for specific population groups, to inform the development of targeted interventions.[44,45]

This is one limitation of population surveys; they may not have sufficient sample sizes of some population subgroups to accurately monitor trends. The evidence base can also be expanded through opportunistic investment in the evaluation of new projects and developments, which can be supported by closer collaboration between policy makers, practitioners and research teams, and earlier engagement of research teams in the planning process.

Measurable PA-related goals and objectives for target groups should be clearly specified in policies along with realistic timeframes for achieving them over the short, medium and longer term.[25] These can provide strong drivers for developing effective interventions, and securing sustained and proportionate resourcing and funding for their implementation and maintenance.[25]

A commitment is also needed to evaluate and monitor the differential effects of policies on subgroups to ensure inequalities are not widened, such as where the policy encourages greater improvements to PA among the more advantaged and already active groups, compared to the more disadvantaged and inactive groups.[47] This requires developing or adapting PA monitoring systems to enable the disaggregation of data to reflect different aspects of social disadvantage.[25]

For Aboriginal and Torres Strait Islander peoples, it is vital that action is taken to build capacity through training and mentoring of community members who can develop and lead PA policies and programs, and their evaluation. Additional recommendations for investment and action to increase PA among Aboriginal and Torres Strait Islander peoples are:

- Develop affordable, accessible and culturally relevant PA opportunities[47]
- Co-design and develop PA programs with local Aboriginal and Torres Strait Islander communities[47]
- Implement culturally relevant gender and age specific programs, including group-based programs[48,49]
- Enable and support traditional physical activities such as hunting, fishing, land and resource management[50] and traditional Aboriginal and Torres Strait Islander games[51]
- Invest in sport initiatives that promote PA for health and broader social benefit.[47,52]

4.4 What are the implications for policy?

Policy should aim to reduce PA inequity and increase population-level PA as complementary goals. Effective responses should prioritise actions across the best investment domains and GAPPA priority areas that address barriers to PA, while protecting and enhancing those factors which enable and encourage participation among socially disadvantaged groups. A combination of upstream and downstream approaches is needed to expand opportunities for PA and promote awareness and uptake of those opportunities across the life course. Policy makers should consider partnering with a broader range of sectors and organisations to better understand and address the needs of subgroups. Community engagement is paramount although it is important to provide support for communities to readily participate in these processes. Finally, policies need to set out clear and measurable PA-related targets for subgroups and ensure monitoring systems can evaluate progress towards these targets.

- **PA policy should aim to reduce inequity and increase population-level PA as complementary goals, using a combination of upstream (environmental) and downstream (awareness raising and education) approaches**
- **Table 24 describes the four types of policy approaches which can help to reduce inequity in PA. Table 25 provides practical guidance and examples of recommendations for action and investment across the 'best investment' domains and GAPPA action areas**
- **Policy actions should address equity across the life course. Co-design with communities is essential for strategy development**
- **Policy should specify clear and measurable PA-related targets for subgroups and be supported by monitoring systems that can evaluate progress.**

Table 25. Recommendations for investment and action

Best investment domain and GAPPA policy priority[a]	Guidance and examples for policy makers
Community-wide programs	
1.3 Implement regular mass-participation initiatives in public spaces, engaging whole communities, to provide free access to enjoyable and affordable, socially and culturally appropriate experiences of PA **3.6 Implement whole-of-community initiatives, at the city-, town- or community-levels, that stimulate engagement by all stakeholders and optimise a combination of policy approaches, across different settings, to promote increased participation in physical activity and reduced sedentary behaviour by people of all ages and diverse abilities, focusing on grassroots community engagement, co-development and ownership**	• Target these towards areas of high disadvantage and low participation • Involve a range community partners • Link with existing community events **Examples:** • Whole city-wide or municipality-level programs that target all groups in the community • Temporary road closures such as Play Streets, Open Streets and Ciclovias which can provide safe and accessible opportunities for PA in communities with limited access to safe and/or well-maintained parks or playgrounds[53] • *Parkrun* – a free, mass-running initiative that occurs weekly in community settings (generally public parks) that may help to reduce financial and geographic barriers to PA in low socioeconomic groups and appeal to less active groups such as women, older adults and overweight individuals.[54] Cross-sectoral partnerships and targeted investment may help to enhance parkrun's reach in less active or disadvantaged groups.[55]
Communication and public education	
1.1 Implement best practice communication campaigns, linked with community-based programs, to heighten awareness, knowledge and understanding of, and appreciation for, the multiple health benefits of regular PA and less sedentary behaviour, according to ability, for individual, family and community wellbeing **1.2 Conduct national and community-based campaigns to enhance awareness and understanding of, and appreciation for, the social, economic, and environmental co-benefits of physical**	• Feature a more diverse range of individuals in public education campaigns and promotional materials to address sociocultural barriers, improve societal attitudes and help shift norms in support of PA regardless of age, gender, ability, and cultural background.[13,55,56] **Example:** • 'This Girl Can – Victoria' is a three-year VicHealth campaign inspired by the Sport England campaign. It features voices and stories of diverse women across Victoria, including Aboriginal and Torres Strait Islander women, women from culturally diverse backgrounds, women with disabilities, from across the LGTBI community, with lower income or education levels, and women living in regional and disadvantaged areas.[58]

Best investment domain and GAPPA policy priority[a]	Guidance and examples for policy makers
activity, and particularly more walking, cycling and other forms of mobility involving the use of wheels (including wheelchairs, scooters and skates), and thereby make a significant contribution to achievement of the 2030 Agenda for Sustainable Development	
Sport and recreation	
3.3 Enhance provision of, and opportunities for, more PA programs and promotion in parks and other natural environments (such as beaches, rivers and foreshores) as well as in private and public workplaces, community centres, recreation and sports facilities, cultural spaces and faith-based centres, to support participation in PA, by all people of diverse abilities 3.4 Enhance the provision of, and opportunities for, appropriately tailored programs and services aimed at increasing PA and reducing sedentary behaviour in older adults, according to ability, in key settings such as local and community venues, health, social and long-term care settings, assisted living facilities and family environments, to support healthy ageing 3.5 Strengthen the development and implementation of programs and services across various community settings, that engage with, and increase the opportunities for, physical activity in the least active groups, as identified by each country, such as rural and Indigenous communities, and vulnerable or marginalised populations, embracing positive contributions by all people	• Provide support and incentives for local and state governments, and community organisations, to develop and promote PA programs in areas of high disadvantage and low participation and involve active engagement from under-represented groups in their development.[58,59] Evaluate pilot projects and ensure they are sustainable and scalable once pilot funding ends.[60] • Support program managers with training and guidance on targeting, marketing and monitoring participation among socially disadvantaged groups, and modifying the sporting offer to appeal to different groups.[60] (See also Chapter 3.8 Sport and recreation) • Support sport and recreation organisations to build effective partnerships with other agencies (e.g. schools, health providers, migrant resource centres, local councils) to raise awareness and foster referral pathways and outreach, provide accessible information about sport and recreation opportunities, and improve accessibility to organised PA opportunities (such as via shared facility arrangements, free/low-cost transport assistance, and addressing access issues to venues and facilities).[56] (See also Chapter 3.8 Sport and recreation) • Provide public investment and sector wide schemes to encourage and support: - The development and delivery of inclusive sport and recreation opportunities (including practitioner training to deliver suitable and inclusive activities and environments, and address stigma/attitudinal barriers) - Modifications to sports and recreation facilities, programs and equipment, that are suitable and affordable for people with different needs, particularly from low SES, CALD with specific cultural requirements and those who have a disability[56,61,62] - Removal of user charges to leisure facilities. Offering universal free access to leisure facilities alongside community outreach and marketing activities has been shown to increase participation in swimming and gym activities and overall levels of PA, the effects being greatest in the most disadvantaged groups.[63]

Best investment domain and GAPPA policy priority[a]	Guidance and examples for policy makers
	• Enforce policy and commitment by sporting organisations and facilities to the national Disability Discrimination Act and their stated disability action plans.[56,64,65] **Examples:** • The Victorian Indigenous Surfing Program which has been running for more than 20 years, is one of the longest running Aboriginal engagement programs in Australia, and is reported to attract 600 participants annually.[66,67] The program uses surfing to connect Aboriginal Victorians with the ocean and develop new skills, water safety knowledge and healthy habits. An evaluation of Aboriginal surfing programs in Australia has found they have substantial potential to foster important connections (to community, expertise and country) that can enable participants to learn and develop in meaningful ways within and beyond surfing.[68] • Access for All Abilities (AAA) is a Victorian Government program coordinated by Sport and Recreation Victoria that funds state sporting associations, regional sports assemblies and other organisations to assist and support clubs and associations to provide more inclusive sport and recreation opportunities for people with a disability.[69] The program also funds AAA Play, a free information and referral service delivered by Reclink Australia to connect Victorians with a disability with inclusive sport and recreation opportunities.[70]
Transport and environment	
2.2 Improve the level of service provided by walking and cycling network infrastructure, to enable and promote walking, cycling, other forms of mobility involving the use of wheels (including wheelchairs, scooters and skates) and the use of public transport, in urban, peri-urban and rural communities, with due regard for the principles of safe, universal and equitable access by people of all ages and abilities, and in alignment with other commitments	• Encourage use of public transport services and create or enhance access to places for PA by:[58,71] - Ensuring reliability (particularly in rural areas where services may be more limited) - Making information about services accessible to people with visual and hearing impairments (e.g. provide spoken and visual announcements about stops/destinations on board and at stops/stations) - Making public transport physically accessible to everyone by adopting inclusive mobility principles. • For people living in rural/remote areas, promoting AT (walking or cycling) can be achieved by addressing first and last mile challenges such as improving bicycle/public transit integration[72], and any environmental (e.g. crime/safety, street lighting, and traffic patterns)[73] and individual barriers (e.g. low skills, self-efficacy or experience with cycling). Bike share programs can help expand access for low income groups and have been shown to increase AT both independent of, and in support of public transport use.[74,75]

Best investment domain and GAPPA policy priority[a]	Guidance and examples for policy makers
	• Engage individuals and groups from different sociodemographic backgrounds in neighbourhood environment planning processes, such as through policies that incorporate qualitative and quantitative assessment of the built environment in the planning of PA supportive communities.[76] • Enforce policy and commitment by transport agencies to the national Disability Discrimination Act and their stated disability action plans.[56,64,65]
2.4 Strengthen access to good-quality public and green open spaces, green networks, recreational spaces (including river and coastal areas) and sports amenities by all people, of all ages and of diverse abilities in urban, peri-urban and rural communities, ensuring design is consistent with these principles of safe, universal, age-friendly and equitable access with a priority being to reduce inequalities and in alignment with other commitments	• Involve community groups and volunteers in decisions on how to design and manage public open spaces including trails and footpaths.[31,71] • Enhance the accessibility, quality and appeal to users of local open spaces (in particular, green and blue spaces) to increase their use, focusing particularly on socially disadvantaged communities who may not currently use them. Strategies may include providing:[71,77,78] - Facilities that help people of all ages, cultures/backgrounds to feel safe and welcome - Lighting and other measures (inside and along routes to open spaces) to prevent/reduce antisocial behaviour such as maintaining vegetation - Clear signs that can be understood by everyone, including people with visual impairments or learning disability - Seats with arms and backrests at frequent intervals - Accessible toilets, clean, well maintained and unlocked in daylight hours - Footpaths with even, non-reflective, anti-glare surfaces and tactile paving - Access by public transport, on foot and by bike (including cycle parking) - Fitness equipment/playground equipment. **Example** • In Victoria, a new playscape area was installed in a socioeconomically disadvantaged suburb in an area that was once open space with no features or amenities, and included play and climbing equipment, landscaping, and a nature play area. The impact and cost effectiveness of the installation was evaluated in the Recording and Evaluating Activity in a Modified Park (REVAMP) study. The study provides preliminary evidence of the cost effectiveness of playscapes in facilitating greater levels of PA in low SES communities.[79]

Best investment domain and GAPPA policy priority[a]	Guidance and examples for policy makers
Urban design and infrastructure	
2.1 Strengthen the integration of urban and transport planning policies that prioritise the principles of compact, mixed land use, at all levels of government as appropriate, to deliver highly-connected neighbourhoods that enable and promote walking, cycling, other forms of mobility involving the use of wheels (including wheelchairs, scooters and skates) and the use of public transport, in urban, peri-urban and rural communities **2.3 Accelerate implementation of policy actions to improve road safety and the personal safety of pedestrians, cyclists, people engaged in other forms of mobility involving the use of wheels (including wheelchairs, scooters and skates) and public transport passengers, with priority given to actions that reduce risk for the most vulnerable road users in accordance with the safe systems approach to road safety, and in alignment with other commitments** **2.5 Strengthen the policy, regulatory and design guidelines and frameworks at the national and subnational levels, as appropriate, to promote public amenities, schools, health-care, sports and recreation facilities, workplaces and social housing, that are designed to enable occupants and visitors with diverse abilities to be physically active in and around the buildings, and prioritise universal access by pedestrians, cyclists and public transport**	• Improve streetscapes and AT infrastructure in areas of disadvantage by addressing multiple streetscape components for walking or cycling, including: crosswalk and sidewalk improvements, improved and covered bike parking, installation of traffic calming features (raised platforms, zebra crossings) and parking bays; creating safe places to walk; bike boulevard/lane installation; new greenways; traffic-free bridges and boardwalks.[78] • In developing and reviewing local strategies, policies and plans, use community engagement approaches to respond to the views and needs of people with limited mobility who may be adversely affected by the design and maintenance of streets, footpaths and urban/rural public open spaces. Include those with limited mobility in accessibility audits and in the planning process.[71,80] • Develop and implement policies to ensure people with limited mobility can safely move along and across streets and in public open spaces. For example, ensure that policies address the following: - that there are enough pedestrian controlled crossings and that they all incorporate accessibility features - that signal-controlled crossings allow enough time to cross the road safely - the correct use and maintenance of tactile paving and dropped kerbs - provision of step-free access or where not possible, clear signposting of accessible alternatives.[71]

Best investment domain and GAPPA policy priority[a]	Guidance and examples for policy makers
Primary and secondary healthcare	
1.4 Strengthen pre- and in-service training of professionals, within and outside the health sector, to increase knowledge and skills related to their roles and contributions in creating inclusive, equitable opportunities for an active society **3.2 Implement and strengthen systems of patient assessment and counselling on increasing PA and reducing sedentary behaviour, by appropriately trained health, community and social care providers, as appropriate, in primary and secondary healthcare and social services, as part of universal healthcare, ensuring community and patient involvement and coordinated links with community resources, where appropriate.**	• Provide information and training for primary care practitioners in relation to: - Delivery of brief advice for groups that are particularly likely to be inactive (e.g. older people, people with a disability, people from certain culturally and linguistically diverse groups)[81] - Motivational interviewing for groups more likely to be inactive (such as people with disabilities) and to promote self-efficacy and awareness about suitable local opportunities for PA[56,62,81,82] - Needs assessment and understanding of equity considerations from a socioecological perspective (i.e. the broader societal, environmental and policy factors that may present PA barriers for different groups). **Examples:** • In England, a whole system educational approach is being used to embed PA promotion into clinical practice, through the integration of PA education into undergraduate and postgraduate curricula and continuing professional development.[83] • In Australia, the South Eastern Sydney Local Health District (SESLHD) has developed a lifestyle intervention program, 'Keeping the Body in Mind' (KBIM), for people experiencing severe mental illness. KBIM uses multidisciplinary teams to provide individualised support for patients to adopt changes to diet, exercise, smoking, sleep and stress as part of their mental health treatment.[84] Self-reported PA was found to increase significantly among patients participating in KBIM.[84] A separate lifestyle intervention program was offered to mental health staff prior to the rollout of KBIM to improve staff culture/attitudes towards using PA interventions in mental health and enhance the likelihood of successful implementation.[85]
Education	
3.1 Strengthen provision of good-quality physical education and more positive experiences and opportunities for active recreation, sports and play for girls and boys, applying the principles of the whole-of-school approach in all pre-primary, primary, secondary and tertiary educational institutions, to establish and reinforce lifelong health and physical literacy, and promote the enjoyment	• Ensure mandated levels of quality physical education (PE) are delivered at all schools, including those with a high proportion of disadvantaged students. This may involve policy or curriculum changes to:[86,87] - Mandate minimum time allocations for PE in the curriculum across all year levels - Require appropriate tertiary qualifications for delivery of scheduled PE and organised school sport activities[88,89] - Allocate a minimum amount of activity time at recess and lunchtime[89]

Best investment domain and GAPPA policy priority[a]	Guidance and examples for policy makers
of, and participation in, physical activity, according to capacity and ability **3.3 Enhance provision of, and opportunities for, more PA programs and promotion in early childhood, school and university settings to support participation in PA, by all people of diverse abilities**	- Clearly specify monitoring and accountability measures to strengthen compliance and implementation by schools. • In partnership with health, education and childcare sectors, implement parent-focused, family-based programs to support PA in preschool children. The following features have been associated with effectiveness in improving PA among preschool children from socioeconomically disadvantaged backgrounds: intensive interventions, high parental engagement, group-based sessions, educational approaches, use of behaviour change techniques, skill building and links to community resources to support PA.[86] • Develop travel plans and safe routes to school, ensuring that they are accessible for infants, children and young people with limited mobility or disabilities.[90] **Example:** • Play.Sport is an initiative designed to improve the quality and quantity of PA experiences in schools. It focuses on improving the skills and confidence of teachers and providers of PE and active recreation opportunities during and after school (including PE). After being piloted in schools of two regions in New Zealand from 2017 to 2019, it has subsequently been replicated in two more regions from 2019 and will soon be rolled out to 40% of primary and intermediate schools across New Zealand, with a particular focus on lower socioeconomic areas.[91]
Workplace	
3.3 Enhance provision of, and opportunities for, more PA programm and promotion in private and public workplaces, to support participation in PA, by all people of diverse abilities	• Additional resources or support may be needed to encourage or enable participation among lower income or lower status industries and workers, and address disparities in program accessibility and acceptability across worker populations.[92] These disparities may arise due to:[92] - Ineligibility or inability of low-income workers to participate (e.g. due to part-time or temporary job status; financial constraints; or lack of management support due to perceived 'lack of value' proposition) - Limited readiness or capacity to deliver or support workplace programs among small-mid size organisations or those in low income industries.

[a] GAPPA policy priorities are as set out in the WHO *Global Action Plan on Physical Activity 2018–2030* (GAPPA) (see Appendix 4 for an overview of GAPPA).[93]

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5. Physical activity surveillance

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5.1 Introduction – the role of surveillance

Surveillance systems grew out of infectious disease monitoring, to enable early detection and tracking of the progress of epidemic disease. Surveillance is defined as the "*(continuous) systematic collection, analysis, and interpretation of data for use in the planning, implementation, and evaluation of public health (programs and) practice*".[1] With the increase in chronic disease in recent decades, surveillance of chronic disease risk factors has become a routine part of public health monitoring.[2] Optimal physical activity (PA) surveillance needs to assess elements of the *PA system* as well as monitoring the population prevalence of PA. This chapter is linked to Chapter 1.2 on the prevalence of PA and meeting PA guidelines among Australians, with common themes of measurement and monitoring. The focus of this chapter is to describe the measures of PA used in surveillance and elaborate on the broader measurement and monitoring required for an optimal PA surveillance system (PASS). A surveillance system is tied to the specific elements of a national or regional PA plan and includes a range of indicators required to monitor the implementation and outcomes specified in that plan.

5.2 Measures of physical activity

An optimal PASS needs to use standardised protocols and measures. The first step is to assess PA, usually expressed as the proportion of adults or children meeting PA recommendations (see Chapter 1.2). Traditionally, surveillance systems have used self-report measures, where people are asked to describe their PA participation in a recent period, usually in the past week, past two weeks, or past month.

In designing a PASS, the purpose and type of measurement of PA should be specified: (i) which measure will be used; (ii) has it been validated and used in surveillance systems; and (although rarely considered) (iii) is it sensitive enough to detect changes in population PA. PA is often categorised and assessed by: (i) intensity (e.g. light, moderate, and vigorous); (ii) domain (e.g. work, transport, domestic, and leisure time); and (iii) type (e.g. walking, cycling, running, specific sports).

Measurement can occur across the whole 24-hour spectrum, and can, in addition to measures of PA, also include sitting/sedentary time and sleep (see Figure 34). Establishing which among these measures are essential for surveillance needs careful consideration, based on the strategic outcomes proposed in the PA plan. These should be monitored consistently for the duration of the PASS; typically, this should be at least 10–20 years (i.e. the time required to expect changes in endpoint PA behaviours at the population level). As described in Chapter 1.2, the PA measure should be identical over time to enable time-trends to be established and should be identical across jurisdictions to enable geographical comparisons.

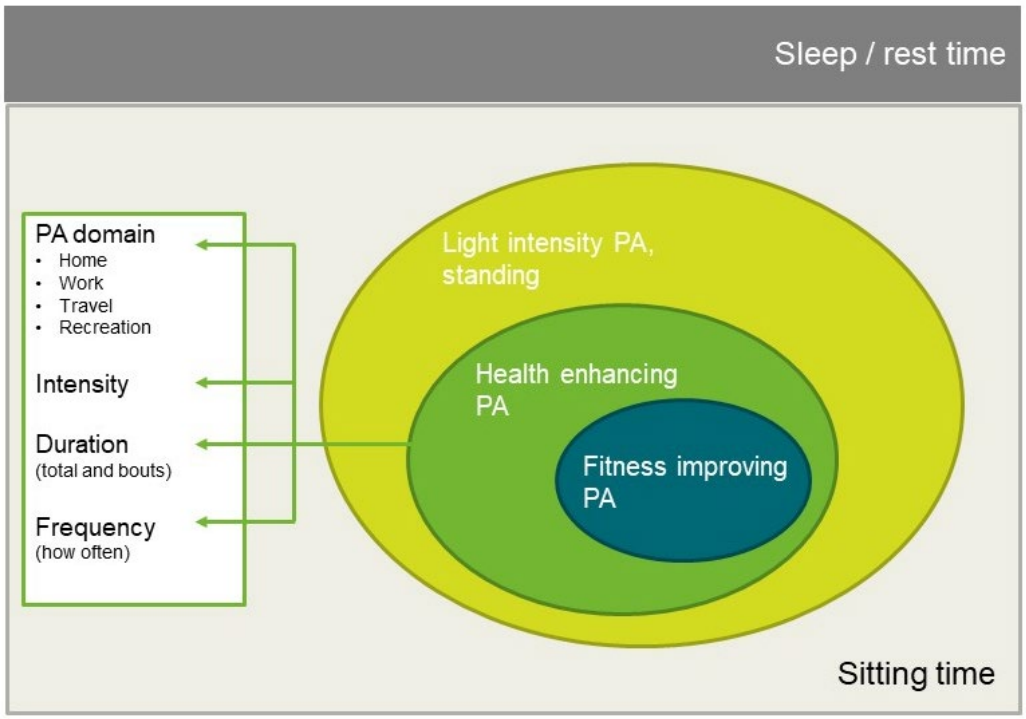


Figure 34. The spectrum of movement behaviours that might be measured

Measurement dimensions may include the frequency of PA, the intensity, the duration of activity, and the types of PA. In some generic brief PA instruments, such as the Active Australia survey[3], these elements are measured broadly, as brief instruments are only six items long. In some surveillance systems, it may be relevant to measure each of the domains or settings for PA in more detail. The mode of data collection should be considered carefully, as self-report measures may provide different estimates when completed by personal or telephone interview, or online.

One problem is that when PA guidelines or recommendations change, the measures to assess them also need to be changed, and this may have a substantial impact on prevalence estimates[4, 5] (see Chapter 1.2). In reality, even small changes to the wording of self-report questions may have a large impact on PA prevalence estimates, and if instruments are changed midcourse, this may obscure accurate trends in PA.[6] Careful attention to preserving identical PA questions over time is necessary for surveillance, even in the face of a plethora of research evidence continuously suggesting alternative and 'improved' measurements. Sometimes, the list of PA measures may need to be expanded, as new dimensions are recommended by updated PA guidelines. For example, in the past decade there has been increasing interest in specific measures of transport-related PA, measures of sedentary behaviour/sitting time, and measures that reflect participation in muscle-strengthening activities and exercise to improve balance. Adding new indicators to an ongoing PASS should be done without affecting the existing set of PA measures.

There has been scientific 'pressure' in recent years suggesting that device-based measures of PA (sometimes referred to as 'objective measures') are more reliable and valid than self-reported measures, and some countries have included accelerometer-based measures in their surveillance systems (notably Norway, Sweden and the US). Accelerometers measure different things to self-report PA, and although reliable, may show differential validity across accelerometer models and do not necessarily provide comparable estimates.[7] Future attempts to harmonise raw accelerometer data may solve this problem, but currently this remains a limitation of accelerometer use. Pedometers have been effectively used in surveillance systems in Canada to monitor steps in school-aged children over time (within Canadian Physical Activity Levels Among Youth – CANPLAY national PASS[8]), and adult pedometer surveillance has been used in Japan for several decades.[9] Pedometer measurement was used in several Australian national and state level surveys to provide a device-based indicator of PA.[5]

PA estimates can also be derived from time-use surveys.[10] Such surveys have been conducted in more than 85 countries worldwide[11], and they inquire about the time spent in a range of daily activities, usually referring to the past day. Although PA estimates from time-use surveys show good reliability and validity[12], processing time-use survey data to obtain PA estimates may be challenging.[13]

Other possible ways of assessing population PA may be through monitoring of aggregated online data from PA apps, wearable devices such as Fitbits, smart phones and smart watches.[14] These are relatively unobtrusive methods for population measurement, but their measurement properties and data sharing and privacy protocols still need to be established.

Each of these different methods of PA measurement will be relevant in different settings, have different cost structures and have different implementation challenges. An informed decision to use a particular form of measurement will be made based on a number of factors and will require consideration and advice from a PA measurement specialist.

5.3 Examples of relevant physical activity surveys in Australia

The data in Table 26 demonstrate the diversity of measures used to assess population level PA in Australia. There is a need for standardisation and consensus processes, to define which measures form the essential components of any proposed integrated and comprehensive PA surveillance system. A survey-based example that collected PA and fitness, but also environmental and organisational measures through serial population-based surveys was the NSW Schools Physical Activity and Nutrition surveys, 1997–2015 (see ***Case Study*** at the end of Section 5.5.3).

Table 26. Examples of population surveys of relevance to physical activity surveillance in Australia

Level of measurement, sector	Surveys	Requirements for a surveillance system
National health surveys, run by ABS, every 3–5 years	National health surveys; ABS NNPAS (2012)[15]	Routine, comparable PA questions over 30 years NNPAS included pedometer measures
State health surveys **Variable periodicity, some run continuously all year; surveys of adults and children**	State-based health survey systems. These typically ask about PA participation, but sometimes include questions on strength training, sedentary time, screen time among children	Note that these surveys use slightly different questions across jurisdictions, so they are not always comparable, and questions sometimes change over time[5]
Routine adolescent health surveys, led by Cancer Council of Victoria	Regular NaSSDA surveys[16], provide sufficient samples for some state-level prevalence estimates	Use validated single item PA question for adolescents
Various large health related cohort studies	Large sample cohort data, with repeated measurements on the same individuals; for example, HILDA and LSAC (children), 45&Up, AusDiab, ALSW, Raine (adults and older adults)	Follow same individuals with drop out occurring; but provide useful data on PA correlates and possibly impact evaluation data for assessing population intervention effects
Sport sector	Sport participation surveys (PSM 1990s, then ERASS in the 2000s, then a five-year hiatus, and then AusPlay surveys 2015 onwards[17])	Population surveys of sport participation and its distribution; changes to surveys and sampling preclude long-term trend analysis

Level of measurement, sector	Surveys	Requirements for a surveillance system
Economic and labour force statistics	Time-use surveys[12] – less frequent surveys, reflect total time used across the day	Can be used to estimate long-term trends in PA and time spent in sedentary behaviours
Department of Transport (various jurisdictions)	Transport and travel surveys: describe trips and trip modes using a two-day diary in representative population samples (see ***Case study*** at the end of this chapter for indicators developed from state-based transport surveys)	Allows estimates and establishing long-term trends in active travel (AT); data access for PA surveillance purposes varies across jurisdictions, for data trend example, see Merom et al 2010[18]
Other/miscellaneous population surveys	Other surveys, such as the ABS General Social Survey, sometimes asked PA relevant questions; ABS Census is useful for trends in mode of travel to work on the Census day	Several non-health data sources could be considered for inclusion in any PA surveillance system

ABS NNPAS = Australian Bureau of Statistics National Nutrition and Physical Activity Survey; NaSSDA = National Secondary Students' Diet and Activity; HILDA = Household, Income and Labour Dynamics in Australia survey; LSAC = Longitudinal Study of Australian Children; 45&Up = surveys from the Sax Institute's 45 and Up Study; AusDiab = Australian Diabetes, Obesity and Lifestyle Study; ALSW = Australian Longitudinal Study on Women's Health; Raine = surveys from the Raine study; PSM = Population Survey Monitor; ERASS = Exercise, Recreation and Sport Survey

5.4 What kinds of physical activity questions exist in international surveillance systems?

Internationally, through the WHO STEPwise approach to surveillance (STEPS), the GPAQ (Global Physical Activity Questionnaire) is widely used in more than 100 countries for assessing domain-specific population PA levels. Surveillance systems for adolescent PA have occurred internationally through the WHO Global School Health Survey, and through the European Health Behaviour in School-aged Children Survey (assessing health behaviour in school children in 49 countries). Within countries, long term monitoring of PA has occurred in the US through, for example, the Behavioral Risk Factor Surveillance System (BRFSS), in Canada through the Physical Activity and Sport Monitor (PAM) surveys, and in Finland and Baltic countries through the Finbalt Health Monitor surveys, providing long-term comparable questions to assess PA trends.

Note that some surveillance systems ask detailed questions about each of the activities that the respondent reported in the previous *12 months* (e.g. in the Canadian PAM), which provides a period prevalence estimate for PA as well as for sport participation. Most surveys ask shorter PA questions, usually recalling PA over the previous one to four weeks. These are typically 6 to 20 questions long and may provide data on domains of PA (work/domestic, transport activity, leisure time activity) or just generic total PA estimates, often characterised as the total time or relative energy expenditure in walking, moderate intensity activity and vigorous intensity activity.

5.5 Beyond individual behavioural measures: building a PASS

5.5.1 Overview of a PASS

Comprehensive surveillance requires assessment of the PA system, not just estimates of PA behaviours (See Table 27). A PASS is a modular structure, with components added as necessary in a particular setting or jurisdiction, or for particular purposes. For example, the Canadian PAM[19] surveys standardised data for both health and sport sectors, and for all 13 provinces and territories. This system collects data from organisations, municipalities and several sectors regarding policy and programs across Canada, as well as monitoring individual PA and sport behaviour.

As shown in the table below, there are routine survey indicators that need to form the long-term components of PA surveillance (level 3 measures). Then, a PASS might collect routine organisation level and policy implementation indicators (shown as level 2 indicators in the table). Examples of ecological-level indicators are shown in the ***Case studies*** at the end of Section 5.5.3, particularly the community-wide system-level indicators developed to monitor the **Victorian Health and Wellbeing** initiative. More acute or short-term implementation measures may be added as needed to a PASS to reflect more immediate indicators of a particular component of the overall PA strategy.

Planning and designing a PASS should be a part of developing any national or regional PA strategy, and the PASS should be integrated into the PA plan. It is more difficult in situations where there is no specific PA plan, where elements of PA surveillance are embedded in general population health indicators, or in an obesity or chronic disease strategy. It is difficult to measure the unique PA-related inter-agency components of a PASS in such 'embedded' situations, as the 'system' is broader and more diffuse if all chronic disease or all population health indicators are included.

Table 27. Levels of indicators in a PASS

Measurement purpose and frequency of assessment	Measurement purpose	Examples
Level 1. Short term implementation Ad hoc process measures as needed No routine measurement	Implementation Indicators [process]	• PA implementation policy and plan • Mobilisation of resources and timeframe • Delivery of programs as intended to reach targets (e.g. school physical education (PE) delivered; municipality builds of multi-use parks) • Creation of infrastructure on time and budget
Level 2. Organisational and policy indicators Routine surveys or audits of key organisations, stakeholders and environments	Settings; system	• Routine surveys of workplaces, schools, primary care, local government, transport and planning sectors • Workplace policy implemented • Audits to monitor the built environment • Systems to monitor non-health indicators such as public transport or park usage • Surveys or interviews of stakeholders
Level 3. Core survey-based indicators Routine individual-based surveys on PA behaviours and correlates	Individual	• Surveys among population-representative samples • Measures of PA antecedents such as access to services, social norms and support, intention, self-confidence to be active, barriers • Measures of other health indicators such as wellbeing, mental health, other health outcomes

5.5.2 Principles of a comprehensive PASS

A comprehensive PASS should be designed according to the principles set out in Table 28.

Table 28. Design principles for a PASS

Design principle	Description
1. Generalisability	It will provide population-generalisable estimates
2. Simplicity	It will cause minimal respondent and researcher burden
3. Data quality	It will provide reliable and responsive estimates of population-level PA
4. Comprehensiveness	It will collect data on all essential components of individual-level PA behaviour and the PA system
5. Between-jurisdictional comparability	It will use standardised measures, to allow for comparisons among jurisdictions and with other countries
6. Continuity and sustainability	It will retain comparable measurement methods over time, to identify trends
7. Adaptability	Its data collection protocols will be flexible enough to enable any essential adaptations to be made without affecting comparability of data over time
8. Affordability	It will require dedicated, secure funding, distributed across different components/measures

5.5.3 Measures for a PASS

Deciding on the choice of measures depends on whether the PASS is standalone and linked to a PA plan, or whether it is being used to assess which components of a PASS can be included in existing chronic disease- or obesity-monitoring frameworks, in which PA is often subsumed. There is no clear guidance on which elements are mandatory, as it depends on the jurisdictional definitions of 'meeting PA guidelines', the organisational change strategies that require monitoring, and the urban environmental/transport interventions that are included as part of prevention strategies. From existing strategic planning documents, a set of PASS-related components can be developed. Note that PASS measures should only be applied where actual change is feasible within the timeframe of the strategic policy; incomplete policy definitions or uncertain timeframes should preclude the use of PASS measures, as otherwise uncertain or incomplete conclusions may be drawn.

The types of measures that could be embedded in a PASS include those set out in Table 29.[20]

Table 29. Types of potential measures for a PASS

Type of measure	Description and examples
1. Individual-level measures	These would be obtained from surveys for all age groups and possibly in any special population group or target group identified in the strategy. They may include: • Measures of PA participation; derived from health-enhancing PA measures; or from transport surveys, occupational surveys, sport participation surveys, or time-use surveys [level 3 measures] • Measures of muscle-strengthening activity and sedentary behaviour/sitting time [level 3 measures]

Type of measure	Description and examples
	• Community views and support for PA behaviour changes, support for public transportation, support for changes in the built environment, support for PA programs at the local level [level 1 measure, as needed] • Individual-level antecedents and determinants of PA, which might include intention to be physically active, attitudes towards PA, perceived barriers to being active, and community awareness of the recommended amounts of PA [level 3 measures]
2. Organisational-level measures	The following are possible examples [all level 2 measures]: • Engagement of municipalities or local councils • Engagement by childcare and preschool facilities • Engagement and changes in schools, PE, wider school/educational environments, AT to school, use of the school before and after class time for PA • Participation by workplaces in providing PA advice, programs, and opportunities • Engagement of the healthcare setting, activity recommendations in primary care, and PA recommendations for people with existing chronic diseases • Engagement of workplaces in implementing PA strategies and policies, activity facilities at work, and travel to work incentives
3. Macro-level (policy/system) indicators	For example, including: • The existence of a PA national plan • The existence and maintenance of cross-sectoral partnerships to promote PA, coalitions and support structures • Committed PA resources in strategic documents • Commitments by non-government organisations and other agencies to PA [this is qualitative, but is part of level 2 measurement]
4. Built environment and transport measures	Measures of the built environment and transport environment, walkability, related urban form and urban density measures [level 2 measurement; see ***Case study*** of the ***Australian Urban Observatory***, at the end of this section]
5. Monitoring of policies, practices, program implementation and reach	Monitoring of policies and practices around PA, monitoring of implementation of programs and their population reach [ongoing measure, level 2]
6. Monitoring of dissemination, reach and uptake of PA guidelines	Monitoring of the dissemination and reach of PA guidelines and their uptake by professional organisations and groups, in the general population, and within communities (this is part of assessing the reach of the PA strategy, level 2 measure)
7. Additional indicators specific to certain types of PA and settings for PA	Additional indicators relevant to specific types and settings for PA that can be linked to any level of measurement. For example, a sport participation surveillance system may need details of specific sports and the extent, type, and costs of participation. A different setting, such as transport, may need data on the nature and mode of reported trips, on car usage, and possibly air quality indicators, as well as behavioural measures of active or passive transportation

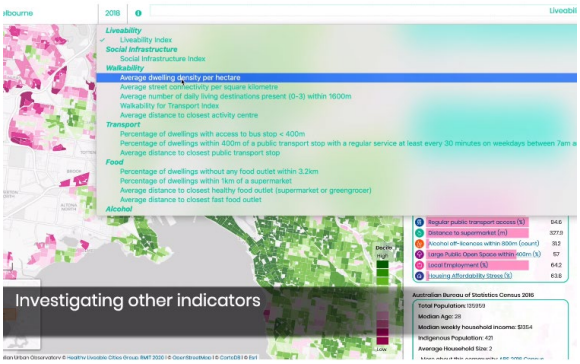
Some ***Case Studies*** are provided below as examples of cross-sectoral surveillance efforts that monitor a component of the PA system. These reflect indicators for urban form, measurement indicators from transport surveys for AT, a NSW survey system for school children and adolescents, and a set of indicators for a state-based system to monitor health and wellbeing outcomes in Victoria.

Case study: Australian Urban Observatory

https://auo.org.au/

The ***Australian Urban Observatory*** is an online tool developed by RMIT health and urban researchers that policy makers can use to measure and compare the liveability of Australian cities, suburbs and neighbourhoods across the domains depicted to the right. The tool can therefore support decisions about resource allocation and policies and programs to create equitable, healthy and liveable places.

Users can access indicators for each of the domains, visualise the indicators within a specific area, and compare indicators across major capital cities for different areas.



Indicators have been chosen based on their association with health and wellbeing outcomes and connection to government policies. The Observatory website explains the rationale for each indicator, what the indicator measures, and how it is measured (see example to the right which describes the methodology behind measurement of the indicator 'Public open space').

Methodology

Three datasets were used in the GIS analysis: public open space, the pedestrian road network, and sample points. Pedestrian road network distances were calculated from each sample point to all areas of open space within 3200 metres. Pseudo-entry points were created along the perimeter of each area of open space at 50 metre intervals, where this perimeter was within 30 metres distance of an accessible path. Areas of open space, and those which may be considered publicly accessible, were identified using a detailed set of OpenStreetMap tags and morphological criterion. Publication of the full method is forthcoming.

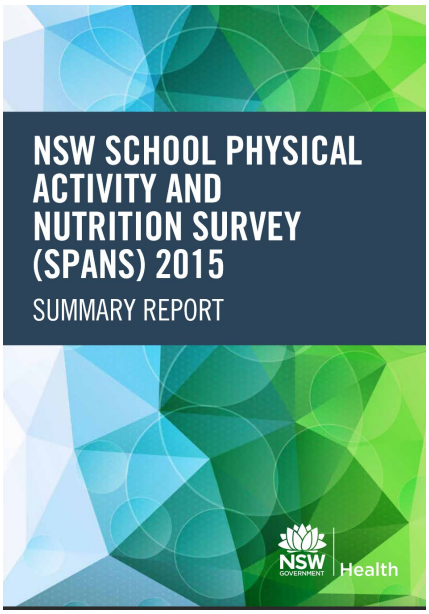
There is a short video tutorial on the website which explains how to use and interact with the Observatory maps:

auo.org.au/wp-content/uploads/2020/02/observatoryTutorial.mp4

Case study: NSW Schools Physical Activity and Nutrition Surveys (SPANS) (1997–2015)

Weblink to the 2015 SPANS survey: www.health.nsw.gov.au/heal/Pages/spans-2015-full-report.aspx

The ***NSW SPANS*** *(Schools Physical Activity and Nutrition Survey(s))* were carried out every ~5 years between 1997 and 2015 on representative samples of NSW School students. These were sampled from primary school grades 2, 4, and 6, and secondary schools grades 8 and 10, and collected data on PA and sport participation, the school environment, PE policies, and in addition, objectively measured fitness using the 20 m beep test, and measured fundamental movement skills, related to the capacity for sport and PA participation.



Examples of data summaries for primary school (upper row) and secondary school pupils (lower panel)

- Less than 1 in 4 (23%) children met the physical activity recommendation every day.
- Among children from Asian cultural backgrounds this was around 1 in 10 (11%).

- 63% of children were in the healthy fitness zone for cardiorespiratory fitness.
- 37% of children were in the healthy fitness zone for muscular fitness.

More than half of adolescents (59%) were in the healthy fitness zone for cardiorespiratory fitness.

Case study: Indicators of active transport (Victoria)

www2.health.vic.gov.au/about/publications/policiesandguidelines/victorian-public-health-and-wellbeing-outcomes-framework

The Victorian Public Health and Wellbeing Outcomes Framework embeds PA measures as part of a broader outcomes framework. The framework brings together indicators from multiple data sources, including for AT.

Example of the information provided by the Data Dictionary for the active transport measure

Domain 1: Victorians are healthy and well | Outcome 1.3: Victorians act to protect and promote health | **Indicator 1.3.1: Increase healthy eating and active living**

Measure	Proportion of journeys that use active transport	
Rationale	Active transport refers to unassisted travel (walking) or non-motorised (bicycle) transportation with an intended purpose or destination. Active transport has many demonstrated benefits – personal (health and fitness), social (community connectivity), environmental (reduced carbon footprint) and economic (infrastructure costs). Adults who walk for transport are more likely to achieve sufficient physical activity than those who do not. A significant proportion of public transport users report that they meet all their recommended levels of physical activity just from their active transport associated with public transport use.	
Measure detail	**1.3.1.7**	**Proportion of journeys that use active transport**
Target	Not set	
Definition	*Numerator:*	Number of trips recorded by household residents on their survey day made in part or fully by walking and/or bicycling
	Denominator:	Total number of trips in survey, weighted to mid-year population estimate (Source–ABS)
	Mode:	Proportion
Data source	*Baseline and future:*	Victorian Integrated Survey of Travel and Activity (VISTA) DEDJTR
	Alternatives:	VPHS (reported as indicators of adults cycling for transport and adults walking for transport)
Data availability	*Baseline year:*	2012–14
	Frequency:	Annual for Melbourne (based on rolling 2-year average); every 4–5 years for Geelong and regional centres
Breakdown	Data available for the survey area by age, sex, purpose of journey, day (all days, weekday, weekend), transport mode and household income, and by location (Melbourne inner/middle/outer, Geelong and Regional centres).	
Comparability	National, state and territory comparison unavailable.	
Linked to	Proportion of adults, adolescents and children who are sufficiently physically active (Measure detail 1.3.1.6.A–C) Proportion of adults, adolescents and children who are overweight and obese (Measure detail 1.3.2.1.A–F) Liveability (TBD) (Measure detail 5.1.1.1)	
Further information	Nil.	

Where data is available, the Outcomes framework also enables assessment of health and wellbeing inequalities.

Snapshot of available population groups and geographic breakdowns for PA measures in the framework

Measures (detailed)		State	Equalities and inequalities (state level)									Geographical		
			Age	Sex	Aboriginal and Torres Strait Islander	Cultural and linguistic diversity	Sexual orientation and gender identity (LGBTI)	Socioeconomic status	Disability / special healthcare needs	Mental health / psychological distress	Chronic / long-term condition	Metropolitan/rural	Regional	Local government area
1.3.1.5	Proportion of infants exclusively breastfed to three months of age	Y	Y	N/A	Y	P	N	P	N	N	N	P	Y	P
1.3.1.6.A	Proportion of adults who are sufficiently physically active	Y	Y	Y	P	Y	N	Y	N	Y	Y	Y	Y	Y
1.3.1.6.B	Proportion of adolescents 10–17 years who are sufficiently physically active	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y	Y	P
1.3.1.6.C	Proportion of children 5–12 years who are sufficiently physically active	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	Y	P
1.3.1.7	Proportion of journeys that use active transport	Y	Y	Y	N	N	N	Y	N	N	N	N/A	Y	N/A
1.3.1.8	Proportion of people participating in organised sport (TBD)	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

5.6 Conclusion: Guidance for policy makers

Developing a PASS is a major undertaking, but it is an essential part of PA strategic planning. It comprises a planned collection of information to understand and support the implementation and evaluation of a PA strategy.[21] It is part of the planning phase of a PA strategy and provides information that should be used continuously to aid refinement and modification of the strategy implementation. Expert decisions need to be made about the measures used, and there needs to be long term commitment to maintain identical measures throughout the lifecycle of a PASS (especially level 2 and 3 measures). If PA is embedded in other prevention-related activities, then elements of the PASS relevant to that system assessment should be used. In optimal circumstances, a comprehensive PASS is a multilevel integrated set of indicators and measures that monitors implementation of a national PA plan, and assesses individual-level behaviours, organisations, settings and sectors, and their relationships in the PA system over time.

Further resources and examples

Refer to the links listed under 'Surveillance and monitoring' in Appendix 5 for other useful resources and guidance.

Refer to Appendix 3 for some illustrative examples of policies, programs and other initiatives in Australia that relate to this domain (particularly those described under GAPPA 4.2, 4.3).

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Appendix 1. Australian national plans and blueprints – synopsis

Australian Government

Sport 2030 – National Sport Plan

Sport 2030 was developed by Sport Australia, the primary federal agency for sport promotion, programs and investment that is located within the Department of Health portfolio. It was publicly released in 2018

This plan represents the Australian Government's vision and plan for sport and physical activity in Australia over the next 12 years

Based on Sport 2030, the Australian Government will:

1. Introduce new programs specifically designed to address the complex barriers to participation many people face such as access, time, cost, as well as minimising injuries and supporting recovery
2. Fund PA partners based on a clear, agreed set of outcomes which will be jointly pursued
3. Continue to support national sporting organisations to lead their networks of organisations and clubs to drive participation in their sports
4. Collaborate and partner across portfolios, with local, state and territory governments, non-government organisations, and the corporate sector, which share the Government's vision for a more active Australia
5. Focus on programs and initiatives that target inactive Australians across their life cycle regardless of gender, race, ability, geography and wealth (building on existing initiatives)
6. Work across agencies to map the current investment in sport and recreation across all portfolios (to better target future policy and programs)
7. Partner with sporting organisations and other PA providers which have a national footprint to deliver programs that encourage inactive people to undertake more PA (this will include people with a disability, people from culturally and linguistically diverse communities, low to medium income households, Aboriginal and Torres Strait Islander people, people from regional and remote areas, women and girls)
8. Work with community organisations and national sporting organisations to ensure people with disability have greater access to participate in a range of sport and PA offerings
9. Partner (through Sport Australia) with organisations which consider the needs of the least active Australians when formulating and delivering their activities and services, that will guide investment in programs which drive positive behaviour change and outcomes
10. Work with state and territory governments and the Australian Curriculum, Assessment and Reporting Authority to find opportunities to support the teaching of physical literacy in the Australian curriculum. (Following the agreement of the Meeting of Sports and Recreation Ministers (MSRM), the Ministers will monitor the progress of efforts to include physical literacy in Australian schools)
11. Work with state and territory Education Ministers to ensure that all children have access to a learn to swim program in primary school
12. Lead (through Sport Australia) the development of the nation's first Early Childhood Activity Strategy
13. Promote the feasibility of developing a reporting system for monitoring the PA levels of children in Australian schools (following the agreement of MSRM)

14. Promote the removal of barriers to enable the use of school sporting infrastructure for sport and PA organisations and the wider community (following the agreement of MSRM)
15. Through Sport Australia, in conjunction with the Commonwealth, state and territory governments, and national sporting organisations, review the current Sporting Schools program to ensure it continues to be the most effective form of delivering sports in primary and secondary schools
16. Fund a national award for digital innovation in sport that can be adopted and adapted by sports, schools and students to engage in sport
17. Work (through Sport Australia) with national sporting organisations and PA stakeholders to decrease the cost of participating in sports and PA, including registration fees, insurance costs, uniform costs
18. Engage with state and territory governments to examine a more collaborative model of community sports infrastructure funding (following the agreement of the MSRM)
19. Examine opportunities to create a database on sports infrastructure and work with local government and national sporting organisations to develop a national approach to mapping infrastructure across Australia (following the agreement of the MSRM)
20. Lead (through Sport Australia) the development of best practice sport and PA infrastructure, facility design and use.

Source: Australian Government (2018) *Sport 2030: Participation, Performance, Integrity, Industry*; Building a more active Australia (pp 14-29). www.sportaus.gov.au/nationalsportplan/home

National Heart Foundation of Australia

Blueprint for an Active Australia (3rd ed)

The National Heart Foundation prepared this third edition of the Blueprint in collaboration with Australia's researchers and leaders in PA, transport, planning and health. It was publicly released in 2019

The Blueprint outlines the case for change across 13 action areas to increase population PA

The Blueprint covers each action area using a similar format, each exploring the case for change under the heading ***'Why is this important?'***, followed by presentation of recommended initiatives and approaches under ***'What must be done?'***. The action areas are:

1. Built environments
2. Workplaces
3. Health care
4. Active travel
5. Prolonged sitting (sedentary behaviour)
6. Sport and active recreation
7. Disadvantaged populations
8. Aboriginal and Torres Strait Islander peoples
9. Children and adolescents
10. Older people
11. Financial measures
12. Mass-media strategy
13. Research and program evaluation

Source: National Heart Foundation of Australia (2019) *Blueprint for an Active Australia*. 3rd ed. National Heart Foundation of Australia: Melbourne. www.heartfoundation.org.au/for-professionals/physical-activity/blueprint-for-an-active-australia

Appendix 2. National Strategic Framework for Chronic Conditions – synopsis

Australian Health Ministers' Advisory Council

National Strategic Framework for Chronic Conditions

This Framework was developed by the Australian Government (under the auspice of the Australian Health Ministers' Advisory Council) in partnership with states and territories. It was endorsed by all Health Ministers through the COAG Health council and publicly released in May 2017

The Framework is the overarching policy document that sets the directions and outcomes for reducing the impact of a broad range of chronic conditions in Australia. It supersedes the National Chronic Disease Strategy 2005 and associated National Service Improvement Frameworks

The Framework recognises there are often similar underlying principles for the prevention and management of many chronic conditions, and aims to better cater for these shared determinants, risk factors and multi-morbidities. It is directed at decision and policy makers at national, state and local levels, across government and non-government sectors, stakeholder organisations, local health service providers, private providers, industry and communities that advocate for, and provide care and education for, people with chronic conditions and their carers and families.

Source: Australian Health Ministers' Advisory Council (2017) *National Strategic Framework for Chronic Conditions*. Australian Government. Canberra. www1.health.gov.au/internet/main/publishing.nsf/Content/nsfcc

Appendix 3. Examples of national, state, and territory-based activities

Examples are mapped against the recommended action areas in the WHO Global Action Plan on Physical Activity (GAPPA) and their related domains and settings. Some examples appear more than once if they relate to multiple GAPPA action areas.

GAPPA action area 1. Create active societies

1	CREATE ACTIVE SOCIETIES					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
Implement behaviour-change communication campaigns and build workforce capacity to change social norms.						
1.1	**Communications:** Implement social marketing campaigns linked with community-based programs to heighten awareness, knowledge and understanding of the multiple health benefits of regular PA and less SB for individual, family and community wellbeing.	Mass media and public education Community-wide programs	National	Move It Aus	www.sportaus.gov.au/findyour30	Developed by Sport Australia to encourage Australians of all backgrounds, ages and abilities to become more physically active and move more often. It is supported by grants programs targeting inactive communities, community sport infrastructure, and inactive older adults 65+.
		Mass media and public education Community-wide programs	WA NT TAS	LiveLighter	livelighter.com.au/about-physical-activity/	LiveLighter is an evidence-based public education campaign that aims to encourage people to people to eat well, be physically active and maintain a healthy weight. The program supports active living through educational resources, PA programs and a PA calculator.

1	CREATE ACTIVE SOCIETIES					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
1.1	**Communications** (continued)	Mass media and public education Community-wide programs	VIC	This Girl Can	thisgirlcan.com.au gettingwomenactive.com.au/	Developed by VicHealth based on Sport England's campaign, 'This Girl Can - Victoria' empowers women to become more physically active regardless of their ability or body shape. It provides women with access to an online support community and partners with community sporting clubs, facilities and other providers (campaign supporters) to create more inclusive sports and PA opportunities for women. It is supported by grants programs for local government and sporting organisations to increase the number and quality of participation opportunities across Victoria.
		Mass media and public education Community-wide programs	VIC	Premier's Active April	www.activeapril.vic.gov.au/	Annual campaign that which encourages all Victorians to do 30 minutes of PA a day during April. Participants register for free, and can log their daily activity to track progress, create and join teams, and receive access to instructional videos and offers and discounts to PA opportunities and facilities across Victoria.
1.2	**Co-benefits:** Through knowledge-sharing and information campaigns, build awareness, understanding and appreciation of the multiple social, economic, and environmental co-benefits of physical activity, particularly more walking, cycling and other forms of mobility involving wheels.	Communities and local government	National	Heart Foundation Walking	walking.heartfoundation.org.au/	Heart Foundation Walking is Australia's largest free walking network, that aims to raise the profile of walking as a fun, social, free and easy way for people to be active. Walking groups are set up in local communities in partnership with Host Organisations and Local Coordinators. Participants can track their progress using the Heart Foundation Walking app and are rewarded for achieving walking milestones.

1	CREATE ACTIVE SOCIETIES					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
1.2	**Co-benefits** (continued)	Urban design and infrastructure	National	Healthy Active by Design (Heart Foundation)	www.healthyactivebydesign.com/	Developed by the Heart Foundation in collaboration with agencies across health, planning, sport and recreation, transport sectors. Builds on international best practice to provide a practical guide and information sharing opportunities to help planners, urban designers and related professionals to create more supportive built environments for health and PA. The website includes a database of case studies that can be searched according to Type of Project (e.g. infrastructure, local government, policy and placemaking initiative), Design feature (e.g. Movement Networks, Public Open Space, Destinations), State and Location (Remote, Rural, Regional and Urban). Each case study details the range of benefits delivered by the project, (e.g. health, economic, environmental, social and use value).
		Transport and environment Education	National	Nature Play	www.natureplay.org.au/	Nature Play Australia partners with government departments and other groups, to promote unstructured play outdoors and in nature among children. It has developed a range of professional development opportunities, workshops and resources to help educators integrate outdoor learning experiences into the curriculum. This is complemented by awareness raising campaigns such as a nationwide Outdoor Classroom Day campaign.

1	CREATE ACTIVE SOCIETIES					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
1.2	**Co-benefits** (continued)	Urban design and infrastructure Transport and environment	NSW	Active Transport (Walking and Cycling) Program	www.rms.nsw.gov.au/business-industry/partners-suppliers/lgr/active-transport/index.html	A component of this program includes funding for local councils and state government authorities to deliver non-infrastructure projects that promote the benefits of walking or cycling for transport in local communities. Eligible proposals must promote, educate and/or inform customers on the benefits of walking or cycling for a purpose other than recreation, and may include campaigns, community engagement, and informational material.
1.3	**Mass participation events:** Implement regular mass participation initiatives in public spaces, engaging entire communities, to provide free access to enjoyable and affordable, socially and culturally appropriate experiences of PA	Communities and local government	National	PlayStreets	www.playstreetsaustralia.com	Founded by CoDesign Studios with support from VicHealth and the City of Melbourne. The concept involves temporarily closing streets to traffic to create opportunities for children and parents to play outside and promote friendlier neighbourhoods. Offers a free toolkit to help communities set up Play Streets and additional support for organisations.
		Communities and local government	Various	Healthy Darwin	www.darwin.nt.gov.au	Local government initiative that provides year-round low-cost activities for residents to promote health and PA. Where possible, activities use Council's parks, recreation facilities or community centres and aim to provide opportunities in areas that previously had limited group exercise options. The program also offers low cost workshops (such as adult bike-with-confidence and learn-to-swim courses) to build knowledge and skills particularly among new arrivals.

1	CREATE ACTIVE SOCIETIES					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
1.3	**Mass participation events** (continued)	Sport and recreation	National	Parkrun	www.parkrun.com.au	Parkrun organises free, socially focused 5km runs in over 300 parks and open spaces around Australia every Saturday. More than 650,000 people have participated since the first parkrun event was launched in 2011. Many health professionals in Australia are signposting to parkrun events as a way of helping to improve the health and wellbeing of their patients.
1.4	**Capacity-building:** Strengthen pre- and in-service training of professionals, within and outside the health sector and in grassroots community groups and civil society organisations, to increase knowledge and skills related to their contributions in creating inclusive and equitable opportunities for an active society.	Urban design and infrastructure	National	Healthy Active by Design (Heart Foundation)	www.healthyactivebydesign.com/	Developed by the Heart Foundation in collaboration with agencies across health, planning, sport and recreation, transport sectors. Builds on international best practice to provide a practical guide and information sharing opportunities to help planners, urban designers and related professionals to create more supportive built environments for health and PA. Resources include case studies, checklist tools, and video interviews with built environment professionals.
		Urban design and infrastructure	NSW	Better Placed	www.governmentarchitect.nsw.gov.au/policies/better-placed	Developed by the NSW Government Architect, Better Placed is an integrated design policy that aims to enhance the built environment in NSW through: advocacy for the importance of design for better places, spaces and outcomes (including for health and climate resilience); providing support to industry and government to deliver good design for people (including through design guides, manuals and case studies); and enabling effective design processes to be established and supported in the planning system.

1	CREATE ACTIVE SOCIETIES					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
1.4	**Capacity-building** (continued)	Urban design and infrastructure	NSW	Healthy Urban Development Checklist	www.health.nsw.gov.au/urbanhealth/Publications/healthy-urban-dev-check.pdf	The checklist is a practical tool for NSW health professionals and others outside the health sector. It is designed to assist engagement with the planning and development process and support feedback on development policies and plans. It offers a standardised way to evaluate built environment factors that affect health and suggests ways to reduce negative impacts and improve health outcomes for a wide range of health determinants. These include education, employment, housing, social networks and relationships, air quality, food and access to social infrastructure and health care.
		Sport and recreation	VIC	Victorian Active Ageing Partnership	www.msk.org.au/vaap/	The Victorian Active Ageing Partnership aimed to increase opportunities for participation in physical activity for older Victorians, especially those who are socioeconomically disadvantaged, isolated or lonely. It focused on developing partnerships, workforce and organisational capacity, and pathways to engage older Australians. Initiatives included annual Research and Practice Forums, and development of tools and resources for practitioners – which remain available at the website listed.
		Workplace	SA	Healthy Workers Healthy Futures	www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/healthy+living/healthy+communities/healthy+workers+-+healthy+futures+initiative	The Healthy Workers – Healthy Futures (HWHF) initiative was implemented in SA in partnership with peak industry bodies to build industry, organisational and worker capacity and capability to implement health and wellbeing strategies in the workplace. SA Health is currently partnering with Business SA to pilot a Healthy Workers Across Industry Program to provide advice and support to peak industries and industry associations on how they can address health and wellbeing for their members.

1	CREATE ACTIVE SOCIETIES					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
1.4	**Capacity-building** (continued)	Primary and secondary healthcare	National	RACGP Shaping a Healthy Australia	NA	Currently in development, the project aims to pilot and implement an interactive, online program to support GPs with encouraging behaviour change among their patients, including increased PA. The project seeks to engage population groups at increased risk of chronic disease.
		Primary and secondary healthcare	National	Exercise is Medicine	exerciseismedicine.com.au/	Exercise is Medicine is a global initiative, managed in Australia by Exercise & Sport Science Australia. It aims to make PA assessment and exercise prescription a routine part of disease prevention and treatment for all patients in Australia. Professionally accredited workshops are offered free-of-charge to upskill GPs and practice nurses and provide resources and information to assist practices engage patients in conversations about PA and support long-term behaviour change.
		Transport and environment Education	National	Nature Play	www.natureplay.org.au/	Nature Play Australia partners with government departments and other groups, to promote unstructured play outdoors and in nature among children. It has developed a range of professional development opportunities, workshops and resources to help educators integrate outdoor learning experiences into the curriculum. This is complemented by awareness raising campaigns such as a nationwide Outdoor Classroom Day campaign.

1	CREATE ACTIVE SOCIETIES					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
1.4	**Capacity-building** (continued)	Education	NSW	iPlay	iplay.org.au	Developed in collaboration with Australian Catholic University, University of Newcastle and the NSW Department of Education, iPlay is an evidence-based, multicomponent PA initiative aimed at improving the quality of school sport and PE in primary schools. School-identified iPlay Leaders work alongside a program mentor to lead teachers through an online professional development course, set goals and provide feedback on practice. Components include quality physical education (PE) and school sport, classroom energiser breaks, and physically active homework.
		Education	VIC	Transform-Us!	transformus.com.au	Transform-Us! is a free program available to all primary schools in Victoria that was developed by Deakin University and other international experts in partnership with the Victorian Department of Education and Training, VicHealth and teaching associations. The program is designed to help teachers integrate and promote movement in their class lessons, homework and break times, using innovative behavioural, pedagogical and environmental strategies. The focus is on changing the delivery (rather than the content) of everyday class (rather than sport or PE) lessons so they incorporate more movement.

ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; QLD =Queensland; SA = South Australia; TAS = Tasmania; VIC = Victoria; WA = Western Australia; PA = physical activity; SB = sedentary behaviour

[a] Programs were classified as 'NATIONAL' if they are available in multiple states or territories in Australia.

[b] This is not intended to be an exhaustive capture of policies and programs against the WHO GAPPA actions, but to identify key examples in Australia that relate to WHO GAPPA actions.

GAPPA action area 2. Create active environments

2	CREATE ACTIVE ENVIRONMENTS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
Promote safe, well maintained infrastructure, facilities and public open spaces that provide equitable access to places for walking, cycling and other physical activity.						
2.1	**Policy integration:** Strengthen the integration of urban and transport planning policies that prioritise the principles of compact, mixed-land use to deliver highly connected neighbourhoods that enable and promote walking, cycling, other forms of mobility using wheels, and use of public transport, in urban, peri-urban and rural communities.	Urban design and infrastructure	ACT	Territory Plan 2008	www.planning.act.gov.au/tools-resources/plans-registers/plans/territory_plan/territory_plan_master_page	Key statutory planning document in the ACT that aims to ensure that planning and development in the ACT provides an attractive, safe and efficient environment for people to live, work and have recreation. Sets out social sustainability principles that address healthy urban design principles and promote active living, which are in turn reflected in the objectives and codes for different planning zones. Section 50 of the Planning and Development Act prohibits Ministers and Territory authorities from doing or approving anything inconsistent with the Plan.
		Urban design and infrastructure Transport and environment	NSW	Greater Sydney Region Plan	www.greater.sydney/metropolis-of-three-cities	This plan sets out a 40-year vision and establishes a 20-year plan to transform Greater Sydney into three cities where most residents live within 30 minutes of their jobs, education and essential services. It was developed concurrently with the NSW State Infrastructure Strategy and Future Transport 2056, to create a planning framework that integrates land use, transport and infrastructure planning between the three tiers of government and across NSW agencies. Progress of implementation of the Greater Sydney Region Plan is monitored and reported under the Pulse of Greater Sydney framework (see below, GAPPA 4.2 for further details).

2	CREATE ACTIVE ENVIRONMENTS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
2.1	**Policy integration** (continued)	Urban design and infrastructure Transport and environment	QLD	State Planning Policy	dilgpprd.blob.core.windows.net/general/spp-july-2017.pdf	The Queensland government introduced new planning laws in 2017 to help achieve outcomes in liveability, sustainability and prosperity. The State Planning Policy (SPP) is the primary state planning instrument and is a statutory document that requires all local governments to appropriately integrate the relevant state interest policies into their local planning instruments. State interest policies include those that aim to deliver 'liveable, well-designed and serviced communities...to support wellbeing and enhance quality of life'. Performance outcomes or benchmarks are specified for each state interest.
		Urban design and infrastructure Transport and environment	SA	30-Year Plan for Greater Adelaide	livingadelaide.sa.gov.au/	Sets out the South Australian Government's vision for the growth and development of this most populated part of SA to 2036. The plan incorporates several healthy built environment elements around: infill and higher density development; quality open space and green cover; housing diversity and affordability; and active transport.
		Urban design and infrastructure Transport and environment	VIC	Plan Melbourne 2017–2050	www.planmelbourne.vic.gov.au/the-plan www.planmelbourne.vic.gov.au/current-projects/20-minute-neighbourhoods	This is a long-term metropolitan planning strategy that integrates land use, infrastructure and transport planning and embeds action across state government departments, authorities, agencies and local government. Actions include embedding the '20-minute neighbourhood' concept as a key goal across government. A pilot program was implemented to test and evaluate the practical delivery of this concept and provide guidance as part of a whole-of-government case study. A report on the pilot program is available. There is a secondary phase that focuses on greenfield neighbourhoods.

2	CREATE ACTIVE ENVIRONMENTS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
2.2	**Infrastructure:** Improve the level of service provided by walking and cycling network infrastructure, to enable and promote walking, cycling, other forms of mobility using wheels and use of public transport, in urban, peri-urban and rural communities, with due regard for the principles of safe, universal and equitable access for people of all ages and abilities and in line with other commitments.	Urban design and infrastructure	ACT	Design Standard for Pedestrian and Cycling Facilities (DS13)	www.cityservices.act.gov.au/plan-and-build/pre-development-applications/estate-development-plans/design_standards_for_urban_infrastructure	These are technical standards intended for use by practitioners, to ensure a consistent approach to the planning and design of pedestrian and cycling facilities. Its aim is to ensure facilities are planned and designed with careful consideration of key design principles (addressing coherence, directness, safety, attractiveness and comfort) and provide the level of amenity suitable for all anticipated user groups including users with limited mobility and parents with prams.
		Urban design and infrastructure Transport and environment	NSW	Walking and Cycling Program	www.transport.nsw.gov.au/projects/programs/walking-and-cycling-program	The NSW Government's Walking and Cycling Program funds local councils and state authorities to deliver infrastructure projects that improve walking and cycling access. The key objectives of the 2020–21 Program are to ensure walking and cycling are the most convenient option for short trips to key destinations and within centres; reduce congestion on our roads and public transport networks by delivering projects that encourage walking and cycling mode shift; enable efficient, safe and reliable journey times by prioritising infrastructure that supports pedestrian or cycling movement on certain corridors, consistent with the Movement and Place Framework; and deliver projects that make walking and cycling safe, comfortable and convenient transport modes that are accessible to a wide range of users.

2	CREATE ACTIVE ENVIRONMENTS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
2.2	**Infrastructure** (continued)	Urban design and infrastructure Transport and environment	WA	WA Bicycle Network Grants Program Green Transport Routes (currently being piloted) Principal Shared Path Expansion Program Safe Active Streets Program	www.transport.wa.gov.au/activetransport/major-projects-and-programs.asp	A range of projects are underway that aim to encourage cycling as a safe, convenient and widely accepted form of transport by improving cycling infrastructure and environments. These include the: -WA Bicycle Network Grants Program (a key action in the *Western Australian Bicycle Network Plan 2014-2031*) which provides local governments with funding for the design and implementation of high quality bicycle network infrastructure and programs -Green Transport Routes which involves enhancing the walking and cycling experience by increasing natural landscaping, shade, shelter and amenity along bike paths -Principal Shared Path Expansion Program which aims to expand the network of cycling and pedestrian paths that can be used for long trips as well as being suitable for less experienced riders, pedestrians and short trips -Safe Active Streets Program which involves working with local governments to support safer shared street spaces in suburban areas.
		Urban design and infrastructure Transport and environment	VIC	30-Year Infrastructure Strategy and Plan	www.vic.gov.au/victorian-infrastructure-plan	The Victorian Infrastructure Plan (released in 2017) responds to the recommendations made by Infrastructure Victoria in the 30-Year Infrastructure Strategy. It presents the priorities and future directions of the Victorian Government in nine key sectors, including transport. Key transport priorities include increasing, optimising and maintaining existing assets including improvements to cycling and walking networks, and tram and rail infrastructure. An updated 30-year strategy is intended to be released in 2020.

2	CREATE ACTIVE ENVIRONMENTS						
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
2.2	**Infrastructure** (continued)	Urban design and infrastructure Transport and environment	VIC	Victorian Cycling Strategy 2018-2028	transport.vic.gov.au/Getting-around/Walking-and-cycling	This strategy aims to increase the number, frequency and diversity of Victorians cycling for transport by creating a safer, lower stress and better-connected cycling network, and making cycling a more inclusive experience. Implementation is being led by Active Transport Victoria with the Department of Transport.
		Urban design and infrastructure Transport and environment	QLD	Walking Strategy 2019-2029	www.tmr.qld.gov.au/walking	Queensland's first Walking Strategy recognises walking as an important part of an integrated transport system, and is based around four priorities: planning for walkable communities and places; building connected, comfortable and safe walking environments for all; encouraging more people to walk as part of their 'everyday'; and working together to deliver for walking. The strategy is supported by an action plan which will be updated every two years. Actions will also be delivered through other related strategies and policies.
		Urban design and infrastructure	QLD	Model code for neighbour-hood design and proposed mandatory provisions	haveyoursay.dsdmip.qld.gov.au/creating-healthy-communities	The Queensland government has released a new model code for neighbourhood design to encourage the development of healthier and more active communities in new residential neighbourhoods. The Code provides clear direction to local governments and developers about how to design for healthy and sustainable neighbourhoods by promoting a grid-like street layout, fewer cul-de-sacs, footpaths with street trees for shading and better access to parks and open space. The Government is proposing to make some of the provisions mandatory through amendments to the Planning Regulation 2017.

2	CREATE ACTIVE ENVIRONMENTS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
2.2	**Infrastructure** (continued)	Communities and local government Urban design and infrastructure	TAS	City of Hobart Council streetscape changes supporting active travel	www.hobartcity.com.au/Projects/Current-projects/South-Hobart-Retail-Precinct-Upgrade healthyactivebydesign.com.au/case-studies/hobart-waterfront-renewal-morrison-street	City of Hobart Council has been implementing a program of built environment improvements to streets in key retail precincts to enhance opportunities for active travel and activity in local centres across Hobart. Street design improvements include better crossings, widened footpaths, and sections of segregated bike path with street trees and seating. The program of works includes engagement with local community, traders and other stakeholders to collaboratively develop design proposals to enhance streetscape design. Streetscape improvements by City of Hobart at Morrison Street are presented in a Healthy Active by Design case study – weblink provided.
2.3	**Safety:** Accelerate implementation of policy actions to improve road safety and personal safety of pedestrians, cyclists, public transport passengers and other vulnerable road users, with priority given to actions that reduce risk for the most vulnerable road users in accordance with the safe systems approach to road safety and in line with other commitments.	Urban design and infrastructure Transport and environment	NATIONAL	National Road Safety Strategy 2011–2020	www.roadsafety.gov.au/	This strategy represents the commitment of federal, state and territory governments to an agreed set of national goals, objectives and action priorities to reduce fatal and serious injury crashes on Australian roads. It is founded on the 'safe system' approach and recognises that road safety activities can support more sustainable and active lifestyles. Actions include requiring: road authorities at all government levels to ensure safe system principles are applied to all new road projects including upgrades; and improving vulnerable road user safety through infrastructure, and speed enforcement and reduction measures.

2	CREATE ACTIVE ENVIRONMENTS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
2.3	**Safety** (continued)	Urban design and infrastructure Transport and environment	WA	Safe Active Streets Program	www.transport.wa.gov.au/activetransport/safe-active-streets-program.asp	Launched in 2015, this program is a key strategy to providing safe walking and riding routes through suburbs that are connected to wider bicycle networks, off-road shared paths and local amenities such as shops, parks, railway stations and schools. The WA Department of Transport is currently working with nine local governments to progress Safe Active Streets projects through various stages of design, consultation, construction and activation.
2.4	**Public open spaces:** Improve access to good-quality public and green open spaces, green networks, recreational spaces (including river and coastal areas) and sports amenities by people of all ages and diverse abilities in urban, peri-urban and rural communities, ensuring design is consistent with these principles of safe, universal, age-friendly and equitable access with a priority being to reduce inequalities.	Urban design and infrastructure Transport and environment	NSW	Metropolitan Greenspace Program / Green Grid	www.planning.nsw.gov.au/About-Us/Our-Programs/Metropolitan-Greenspace-Program	Annual grants funding program for the planning and improvement of regional open space in the greater metropolitan Sydney region. The program aligns with the Greater Sydney Region Plan and Green Grid strategy. Since 1989/90 the program has allocated over $45 million to more than 620 projects in partnership with local government.
		Urban design and infrastructure	NSW	Premier's Priority	www.nsw.gov.au/improving-nsw/premiers-priorities/	The NSW Premier's Priorities include Greener Places to increase the proportion of homes in urban areas within 10 minutes' walk of quality green, open and public space by 10 per cent by 2023.

2	CREATE ACTIVE ENVIRONMENTS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
2.4	**Public open spaces** (continued)	Urban design and infrastructure	QLD	Model code for neighbourhood design and proposed mandatory provisions	haveyoursay.dsdmip.qld.gov.au/creating-healthy-communities	The Queensland government has released a new model code for neighbourhood design to encourage the development of healthier and more active communities in new residential neighbourhoods. The Code provides clear direction to local governments and developers about how to design for healthy and sustainable neighbourhoods by promoting a grid-like street layout, fewer cul-de-sacs, footpaths with street trees for shading and better access to parks and open space. The Government is proposing to make some of the provisions mandatory through amendments to the Planning Regulation 2017.
		Urban design and infrastructure	SA	Open Space and Places for People grant programs	www.saplanningportal.sa.gov.au/current_planning_system/strategic_planning/open_space_and_public_realm_investment	Annual grant funding opportunities for local government to support the development and improvement of quality public open space and revitalise public spaces that are important to the social, cultural and economic life of their communities or region. In the past 10 years, over $190 million has been provided to approximately 500 open space and public realm projects across South Australia.
		Urban design and infrastructure Transport and environment	VIC	Plan Melbourne (Action 93)	www.planmelbourne.vic.gov.au/implementation	Implementation of *Plan Melbourne* involves a dedicated action (Action 93) to prepare a metropolitan open space strategy that enhances recreation, amenity, health and wellbeing (among other things) by including measures to protect and enhance existing open space; increase open space; and enhance the role, function and overall community value of currently underused public land assets (e.g. school grounds).

2	CREATE ACTIVE ENVIRONMENTS						
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
2.4	**Public open spaces** (continued)	Communities and local government Urban design and infrastructure	TAS	City of Hobart Council streetscape changes supporting active travel	www.hobartcity.com.au/Projects/Current-projects/South-Hobart-Retail-Precinct-Upgrade healthyactivebydesign.com.au/case-studies/hobart-waterfront-renewal-morrison-street	City of Hobart Council has been implementing a program of built environment improvements to streets in key retail precincts to enhance opportunities for active travel and activity in local centres across Hobart. Street design improvements include better crossings, widened footpaths, and sections of segregated bike path with street trees and seating. The program of works includes engagement with local community, traders and other stakeholders to collaboratively develop design proposals to enhance streetscape design. Streetscape improvements by City of Hobart at Morrison Street are presented in a Healthy Active by Design case study – weblink provided.
		Sport and recreation Transport and environment	QLD	Activate! Queensland 2019–2029	www.hpw.qld.gov.au/about/strategy/sport/about	Activate! Queensland is Queensland's 10-year strategy that outlines a whole-of-government approach to increasing PA among Queenslanders of all ages and abilities by addressing four priority areas including 'Activate environments'. This priority area aims to activate places and spaces to cultivate community activity, design and build quality spaces and safe walking and cycling networks, and encouraging people to get active through nature-based recreation and tourism.

2	CREATE ACTIVE ENVIRONMENTS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
2.4	**Public open spaces** (continued)	Sport and recreation	QLD	Get Playing Places and Spaces	www.qld.gov.au/recreation/sports/funding/getinthegame/getplaying	This is one of the funding programs that comprise the Queensland Government's *Get in the Game* initiative to support sport and active recreation at the grassroots level. This funding program aims to assist local and regional sport and recreation organisations and some local governments with new, upgraded or replacement infrastructure development that supports participation in sport and active recreation.
2.5	**Design:** Strengthen the policy, regulatory and design guidelines and frameworks to promote public amenities, schools, healthcare, sport and recreation facilities, workplaces and social housing, that enable all occupants and visitors of diverse abilities to be physically active in and around buildings and prioritise universal access by pedestrians, cyclists and public transport.	Urban design and infrastructure	NATIONAL	National Disability Strategy	www.dss.gov.au/our-responsibilities/disability-and-carers/publications-articles/policy-research/national-disability-strategy-2010-2020	This Strategy represents a cooperative approach by Australian governments to support Australians with a disability. One of the six policy areas relates to 'inclusive and accessible communities' to enable the full inclusion of people with disability in social, economic, sporting and cultural life. Policy directions include improving the accessibility of the built environment through planning and regulatory systems such as the *Disability (Access to Premises-Buildings) Standards 2010*. Policy Community and Disability Services Ministers from each jurisdiction are responsible for driving implementation of the Strategy.

2	CREATE ACTIVE ENVIRONMENTS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
2.5	**Design** (continued)	Urban design and infrastructure	NATIONAL	Disability (Access to Premises - Buildings) Standards 2010	www.legislation.gov.au/Details/F2011C00214	These Standards have legal enforceability under the Disability Discrimination Act 1992 (s31(1)). The Standards align Commonwealth disability discrimination law with State and Territory building law, to deliver systemic and widespread improvements in non-discriminatory access for people with disability to publicly accessible buildings. Building certifiers, developers and managers of a relevant building must ensure the building complies with the Access Code for Buildings (which is based on the Building Code of Australia).
		Urban design and infrastructure	NATIONAL	Healthy Active by Design (Heart Foundation)	www.healthyactivebydesign.com/	Developed by the Heart Foundation in collaboration with agencies across health, planning, sport and recreation, transport sectors. Builds on international best practice to provide a practical guide and information sharing opportunities to help planners, urban designers and related professionals to create more supportive built environments for health and PA. Resources include case studies, checklist tools, and video interviews with built environment professionals.

ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; QLD =Queensland; SA = South Australia; TAS = Tasmania; VIC = Victoria; WA = Western Australia; PA = physical activity; SB = sedentary behaviour

[a] Programs were classified as 'National' if they are available in multiple states or territories in Australia.

[b] This is not intended to be an exhaustive capture of policies and programs against the WHO GAPPA actions, but to identify key examples in Australia that relate to WHO GAPPA actions.

GAPPA action area 3. Create active people

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
Ensure access to opportunities, programs and services across multiple settings to engage people of all ages and abilities in regular physical activity.						
3.1	**Schools:** Strengthen provision of good-quality physical education and more positive experiences and opportunities for physical activity across pre-primary to tertiary educational settings, applying the principles of a whole-of-school approach to establish and reinforce lifelong health and physical literacy and promote enjoyment of and participation in PA according to capacity and ability.	Education Sport and recreation	National	Sport 2030 (National Sport Plan)	www.sportaus.gov.au/nationalsportplan	Sport 2030 presents the Australian Government's vision and plan for sport and PA in Australia for the next 12 years, to be delivered in partnership with portfolios outside of sport (such as education). Actions include working with state and territory governments to find opportunities to support the teaching of physical literacy in the school curriculum, and to ensure that all children have access to a learn-to-swim program in primary school.
		Education Sport and recreation	National	Sporting Schools Physical Literacy Framework	www.sportaus.gov.au/physical_literacy	Sport Australia, in partnership with the Australian Council for Health, Physical Education, and Recreation (ACHPER) have developed the Sporting Schools Physical Literacy Framework that identifies the key components of a whole-of-school approach to the development of physical literacy in children including characteristics of exemplary school practice. A national Physical Literacy Standard is also under development.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.1	**Schools** (continued)	Education Sport and recreation	National	Sporting Schools	www.sportingschools.gov.au/about	Sporting Schools is an Australian Government initiative designed to help schools increase children's participation in sport, and connect them with community sporting opportunities. To help deliver the program, Sport Australia has partnered with more than 30 national sporting organisations. The Sporting Schools programs are provided free to children and their families to help students build the confidence and capability to be active for life.
		Education	National	Ride2School	www.bicyclenetwork.com.au/rides-and-events/ride2school/	Ride2School is a nationwide program delivered by Bicycle Network that is designed to support schools to encourage, empower and enable more students to ride or walk to school. Schools can apply for grants that can be used for various purposes to support bike riding, including bike parking, bike sheds, school bike fleet, active paths, and bike ed training for teachers.
		Education	NSW	Munch and Move	www.healthykids.nsw.gov.au/campaigns-programs/about-munch-move.aspx	Munch & Move is an initiative of NSW Ministry of Health, NSW Department of Education, Office of Sport and the Heart Foundation that offers training and resources to help educators in NSW early childhood education and care services, to implement a fun, play-based approach to supporting physical activity (and healthy eating) habits in young children. The program is aligned with the National Quality Framework and Early Years Learning Framework.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.1	**Schools** (continued)	Education	NSW	Live Life Well @ School	www.health.nsw.gov.au/heal/primaryschools/Pages/llw-at-school.aspx	Live Life Well @ School is a collaborative initiative between NSW Ministry of Health and the school sectors in NSW. The NSW Department of Education, the Association of Independent Schools of NSW and Catholic Schools NSW all support schools to engage with Live Life Well @ School through a variety of resources and professional learning opportunities. Live Life Well @ School is supported in NSW primary schools to promote healthy eating and physical activity to students. The program aims to get more students, more active, more often and focus on healthy eating habits.
		Education	NSW	iPlay	iplay.org.au	Developed in collaboration with Australian Catholic University, University of Newcastle and the NSW Department of Education, iPlay is an evidence-based, multicomponent PA initiative aimed at improving the quality of school sport and PE in primary schools. School-identified iPlay Leaders work alongside a program mentor to lead teachers through an online professional development course, set goals and provide feedback on practice. Components include quality PE and school sport, classroom energiser breaks, and physically active homework.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.1	**Schools** (continued)	Education	TAS	HealthLit4Kids	www.utas.edu.au/hl4k	HealthLit4Kids is an initiative coordinated by the University of Tasmania that aims to improve health literacy in Tasmania and reduce health inequities in families. HealthLit4Kids works at a local level with children, their schools, families and communities to develop new approaches to learning and health. The program involves researchers working with participating schools to develop an action framework that responds to the school's health literacy needs using school-wide (e.g. environment, systems) and curriculum approaches (e.g. classroom activities).
		Education	VIC	Transform-Us!	transformus.com.au	Transform-Us! is a free program available to all primary schools in Victoria that was developed by Deakin University and other international experts in partnership with the Victorian Department of Education and Training, VicHealth and teaching associations. The program is designed to help teachers integrate and promote movement in their class lessons, homework and break times, using innovative behavioural, pedagogical and environmental strategies. The focus is on changing the delivery (rather than the content) of everyday class (rather than sport or PE) lessons so they incorporate more movement.

3	**CREATE ACTIVE PEOPLE**					
	Recommended actions from GAPPA	**Related domains/ settings**	**Jurisdiction[a]**	**Examples[b]**	**Weblink**	**Description**
3.1	**Schools** (continued)	Education	VIC	Ministerial Policy banning mobile phone usage in schools	www.education.vic.gov.au/school/principals/spag/safety/Pages/mobilephones.aspx	In 2019, the Victorian Minister for Education issued a formal policy under section 5.2.1(2)(b) of the Education and Training Reform Act 2006 banning mobile phone usage in Victorian primary and secondary schools. The rationale for this policy was to provide a safe and distraction-free learning environment as well as to create greater opportunities for social interaction and PA during recess and lunchtimes. Schools are required to develop and enforce their own local policy which addresses how the Ministerial policy will be implemented. Several other jurisdictions (NSW, WA, Tas) have introduced a similar ban.
		Education Transport and environment	VIC	Walk to School	www.walktoschool.vic.gov.au/	Walk to School is a VicHealth initiative that encourages Victorian primary school students to walk, ride or scoot to and from school during the month of October. The Walk to School program promotes regular physical activity in Victorian primary school students. It helps kids and their families establish active routines for life. It funds local councils to support primary schools and communities to make active travel easy, safe and accessible.

3	**CREATE ACTIVE PEOPLE**					
	Recommended actions from GAPPA	**Related domains/ settings**	**Jurisdiction[a]**	**Examples[b]**	**Weblink**	**Description**
3.1	**Schools** (continued)	Education Transport and environment	SA	Way2Go	www.dpti.sa.gov.au/Way2Go/families/planning_the_family_trip/active_travel_passport	This is a statewide program that uses a whole school approach to promote safe, active and green travel for primary school students and their communities. Schools, local councils and the Department of Planning, Transport and Infrastructure work in partnership to create a school community culture of active travel, improve active travel environments and infrastructure around school precincts, and support the integration of road safety education within the regular curriculum.
		Education Urban design and infrastructure	WA	Your Move	yourmove.org.au	Your Move is a free behaviour change program run by the Department of Transport that supports schools (as well as workplaces and communities) to increase walking, scooting and riding among students to school. Travel behaviour change experts work with school champions to help address traffic issues and provide practical ways to teach and develop sustainability at the school. Schools are encouraged to share their stories with the Your Move schools network, to earn points that can be spent on rewards, incentives or infrastructure. Highly engaged schools may be eligible to apply for a Connecting Schools grants to fund bike-related infrastructure, bike education and wayfinding.
		Communities and local government Community-wide programs	QLD	Brisbane Active School Travel	www.brisbane.qld.gov.au/traffic-and-transport/public-transport/school-transport/active-school-travel-program	Brisbane City Council's Active School Travel (AST) program is a three-year travel behaviour change program for primary schools across Brisbane, that has been running since 2004. By focusing on school travel behaviour, AST encourages families to leave the car behind and walk, cycle, scoot, carpool or catch public transport to school.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.1	**Schools** (continued)	Communities and local government Community-wide programs	VIC	Whittlesea Active Travel in Schools	www.healthyactivebydesign.com.au/case-studies/whittlesea-active-travel-in-schools	The City of Whittlesea has adopted a multilevel, multicomponent approach to increasing PA in and around schools by influencing policy, the built environment, community programs and capacity building. The program involves a range of partners including the local council, Bicycle Network, Victoria Walks and VicHealth, as well as engagement with parents, schools and students.
3.2	**Healthcare:** Implement and strengthen systems of patient assessment and counselling on increasing PA and reducing SB by appropriately trained health, community and social care providers, as appropriate, in primary and secondary healthcare and social services, ensuring community and patient involvement and coordinated links with community resources where appropriate.	Primary and secondary healthcare	National	RACGP Red Book Smoking, nutrition, alcohol, physical activity (SNAP) Guide	www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/red-book www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/snap	The Red Book and SNAP Guide are two resources that have been published by the RACGP to assist Australian general practices in the provision of preventive care. Section 7.5 of the Red Book provides recommendations for assessing, advising and referring patients for PA, as appropriate for different age groups and conditions. The SNAP Guide provides guidance on applying a 5As approach to PA (Asking, Assessing, Advising, Assisting, and Arranging).

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.2	**Healthcare** (continued)	Primary and secondary healthcare	National	Exercise is Medicine	exerciseismedicine.com.au/	Exercise is Medicine (EIM) Australia has partnered with primary health networks to roll out EIM workshops across Australia, to educate healthcare providers about the role of PA in prevention and management of chronic disease and to advocate for multidisciplinary care. Primary healthcare providers and allied health professionals can register to join the EIM Australia Network to promote the EIM message through their networks, and access additional resources and support.
		Primary and secondary healthcare	National	RACGP Shaping a Healthy Australia	NA	The Federal Government has funded the Royal Australian College of General Practitioners (RACGP) to develop education and training material for GPs to support Australians achieve a healthy lifestyle through increased PA and better nutrition.
		Primary and secondary healthcare	NSW	Healthy Kids for Professionals	pro.healthykids.nsw.gov.au	The Healthy Kids for Professionals website is a NSW Health initiative to support health professionals in the prevention of childhood obesity. The resources on the website are designed to support health professionals to accurately assess a child's weight status and sensitively discuss healthy lifestyle messages with children above a healthy weight, and their families. Currently, all NSW Health facilities work towards measuring the height and weight of all children and providing families with advice and referral where appropriate.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.2	**Healthcare** (continued)	Remote delivery	NSW SA QLD	Get Healthy Information & Coaching Service	www.gethealthynsw.com.au/ www.gethealthyqld.com.au/ www.gethealthy.sa.gov.au/	The Get Healthy Information & Coaching Service is a free telephone-based coaching service to support adults with reaching personalised lifestyle goals that may relate to physical activity, healthy eating and achieving and maintaining a healthy weight. The program started in NSW and is currently also available in SA and Qld. Tailored programs include programs for pregnancy and type 2 diabetes. Health coaching is delivered by university qualified health professionals over six months. Participants may be referred to the program by their health professionals including GPs.
		Remote delivery Communities and local government	QLD	My Health for Life	www.myhealthforlife.com.au/the-program	My Health for Life is a free, six-month health coaching program which supports adults with achieving their health goals and reducing their risk of chronic disease. Two options are available: small group sessions or one-on-one phone coaching. The program is funded by the Queensland Government and delivered by The Healthier Queensland Alliance, a collaborative partnership led by Diabetes Queensland and including the Heart Foundation, Stroke Foundation, Queensland Primary Health Networks, Ethnic Communities Council of Queensland (ECCQ), and Queensland Aboriginal and Islander Health Council. The ECCQ delivers culturally tailored group sessions for this program using bilingual multicultural health workers. Participants may be referred to the program by their health professionals.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.3	**Multiple other settings:** Enhance provision of, and opportunities for, more PA programs and promotion in workplace, sport and faith-based settings, and in public open spaces and other community venues, to support participation in PA by all people of diverse abilities.	Sport and recreation	National All States and Territories	Participation grants and funding for sport and recreation	www.clearinghouseforsport.gov.au/knowledge_base/organised_sport/funding/participation_grants_and_funding_for_sport_and_recreation	A broad range of sport and recreation funding programs are offered by multiple levels of government and jurisdictions, to increase community participation in PA. The Clearinghouse for Sport webpage (link provided) summarises key sport and recreation funding programs at the federal, state and territory levels and a few examples at the local government level.
		Sport and recreation	National	She Rides	sherides.com.au/	She Rides is a program run by Cycling Australia, Australia's peak cycling body, which helps women develop their skills, confidence and enjoyment of riding. Accredited instructors deliver a 6–8 week structured riding and skills program (including a course for beginners) with a focus on improving fitness, developing skills, and fostering social connection to build confidence and joy in riding. The program is currently available in regional and metro locations across six jurisdictions in Australia.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.3	**Multiple other settings** (continued)	Sport and recreation	NSW	Regional Sport and Active Recreation Plans [draft]	sport.nsw.gov.au/draft-regional-sport-and-active-recreation-plans	Adopts a place-based approach to collaborating, planning and delivering sport and active recreation across NSW state regions. Each plan focuses on achieving outcomes that include: increasing participation of adults and children in regular sport and active recreation; improving access to sport and active recreation regardless of background or ability; and delivering fit for purpose facilities in the region. Each plan provides recommendations for activities that could be implemented in each region, providing a list of possibilities that can be prioritised by each region's Sport and Active Recreation Planning and Delivery Group.
		Sport and recreation	VIC	Active Victoria: A strategic framework for sport and recreation in Victoria 2017-2021	sport.vic.gov.au/publications-and-resources/strategies/active-victoria-strategic-framework-sport-and-recreation changeourgame.vic.gov.au/leadership-centre/victorian-sport-and-recreation-is-on-board	Key strategic document that guides significant investment in infrastructure and programs to support increased PA participation. Key strategic directions relate to: – Meeting demand for infrastructure, programs and opportunities – Enabling broader and more inclusive participation, including among females, Aboriginal Victorians and underrepresented communities – Supporting active recreation – Building system resilience and capacity, through good governance, diverse leadership, strong evidence base and analytical capacity – Adopting a collaborative approach to action and investment. The 'Change our Game' initiative, which introduced a 40% women on sports board quota for all peak organisations receiving program funding from Sport and Recreation Victoria and VicHealth, is an example of one of the systems-level actions undertaken under this framework to support increased PA participation among girls and women.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.3	**Multiple other settings** (continued)	Sport and recreation	VIC	Doing Sport Differently - VicHealth investments in social flexible sports	doingsportdifferently.com.au www.vichealth.vic.gov.au/our-work/innovation-challenges www.vichealth.vic.gov.au/programs-and-projects/vichealth-state-sport-program www.vichealth.vic.gov.au/programs-and-projects/regional-sport-program www.vichealth.vic.gov.au/funding/active-club-grants www.vichealth.vic.gov.au/programs-and-projects/increasing-female-participation-in-sport-initiative www.vichealth.vic.gov.au/programs-and-projects/active-women-and-girls-for-health-and-wellbeing-program	Since 2014, VicHealth has made multiple investments to support programs that focus on engaging less active Victorians in PA through social sport participation opportunities. These include: – Doing Sport Differently: tips for designing and delivering sport to engage people who are less active – Physical Activity and Innovation Challenge: aims to kick-start ideas that help improve health and wellbeing through sport – State Sport Program: involved working with over 20 State Sporting Associations to offer variations on traditional sporting activities to address barriers such as time constraints, accessibility and cost – Regional Sport Program: involves partnering with the 9 Regional Sports Assemblies to engage less active Victorians in rural and regional areas in sport – Active Club Grants: offers small grants to community sporting clubs to support clubs to implement new social or modified sport programs that target less active Victorians. – Changing The Game: involves partnering with six sporting codes to work with women and girls who do not normally participate in traditional sports programs that are provided through clubs and competitions – Active Women and Girls for Health and Wellbeing: includes partnership with sports to create, tailored participation opportunities for women and girls to get involved in sport and PA. As part of the program, all funded sporting organisations sign a VicHealth Gender Equality in Sport Leadership Pledge, demonstrating their commitment to achieving gender balance in all their public events and marketing of their organisation, and prioritising access for women and girls in all facilities they use.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.3	**Multiple other settings** (continued)	Workplaces	NSW	Get Healthy at Work	www.gethealthyatwork.com.au	Get Healthy at Work is a free NSW Health workplace health promotion initiative that aims to reduce chronic disease risk among workers by helping them make small changes to their lifestyles and support businesses to create healthier workplace environments.
		Workplace	SA	Healthy Workers Healthy Futures	www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/healthy+living/healthy+communities/healthy+workers+-+healthy+futures+initiative	The Healthy Workers – Healthy Futures (HWHF) (funded up to 2018) was implemented in SA in partnership with peak industry bodies to build industry, organisational and worker capacity and capability to implement health and wellbeing strategies in the workplace. SA Health is currently partnering with Business SA to pilot a Healthy Workers Across Industry Program to provide advice and support to peak industries and industry associations on how they can address health and wellbeing for their members.
		Workplace Education	VIC	Achievement Program	www.achievementprogram.health.vic.gov.au	The Achievement Program is supported by the Victorian Government and delivered by Cancer Council Victoria. It is based on the WHO model for healthy workplaces and schools and aligns with the Victorian Health and Wellbeing Plan and Outcomes Framework. Participating organisations (early years services, schools and workplaces) have access to resources, support and ability to gain Victorian government recognition across priority areas that include PA.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.3	**Multiple other settings** (continued)	Communities and local government	National	PlayStreets	www.playstreetsaustralia.com	Founded by CoDesign Studios with support from VicHealth and the City of Melbourne. The concept involves temporarily closing streets to traffic to create opportunities for children and parents to play outside and promote friendlier neighbourhoods. Offers a free toolkit to help communities set up Play Streets and additional support for organisations.
		Workplaces Transport and environment	WA	Your Move	yourmove.org.au	Your Move is a free behaviour change program run by the Department of Transport that supports workplaces (as well as schools and communities) to develop, implement, promote and evaluate initiatives to increase active travel among their employees (such as providing end of trip facilities, travel allowance/discounts/incentives, and running events to encourage walking/cycling to and from work). Workplaces are encouraged to share their stories with the Your Move workplaces network to earn points and are recognised on a 'leaderboard' according to points earned.
		Communities and local government	National	Heart Foundation Walking	walking.heartfoundation.org.au	Heart Foundation Walking is Australia's largest free walking network, that aims to raise the profile of walking as a fun, social, free and easy way for people to be active. Walking groups are set up in local communities in partnership with Host Organisations and Local Coordinators. Participants can track their progress using the Heart Foundation Walking app and are rewarded for achieving walking milestones.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	**Related domains/ settings**	**Jurisdiction[a]**	**Examples[b]**	**Weblink**	**Description**
3.3	**Multiple other settings** (continued)	Communities and local government	NATIONAL	PlayStreets	www.playstreetsaustralia.com	Founded by CoDesign Studios with support from VicHealth and the City of Melbourne. The concept involves temporarily closing streets to traffic to create opportunities for children and parents to play outside and promote friendlier neighbourhoods. Offers a free toolkit to help communities set up Play Streets and additional support for organisations.
		Communities and local government	QLD	Cycling Brisbane	www.cyclingbrisbane.com.au www.healthyactivebydesign.com.au/case-studies/cycling-brisbane	Cycling Brisbane is a free behaviour change and promotion program directed by Brisbane City Council to encourage residents to cycle more often. It includes a mix of marketing campaigns, free workshops for people to improve their bike riding skills, an online route planner and other web-based resources. The initiative works closely with the Council's bikeway planners to promote new and existing bikeway infrastructure as part of the Better Bikeways for Brisbane program.
3.4	**Older adults:** Enhance the provision of, and opportunities for, appropriately-tailored programs and services to support older adults to increase PA and reduce SB according to ability, in key settings such as local and community venues, health, social and long term care settings, assisted living facilities and family environments.	Sport and recreation	National	Better Ageing Grants	www.sportaus.gov.au/grants_and_funding/better_ageing	The Better Ageing Grant Program aims to increase levels of PA of Australians aged 65+, particularly those least active, to improve their overall health and wellbeing. Successful applicants will receive grants ranging up to $2m (over two years) to implement new, local, community-based activities that promote the benefits of PA, improve access, enable regular engagement, and enhance capability and capacity of organisations and staff to deliver age-appropriate activities.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.4	**Older adults** (continued)	Sport and recreation	NSW	Modified Sports Program	www.nsw.gov.au/news-and-events/news/nsw-seniors-walking-back-into-sport	Since May 2017, the NSW government has funded six sporting codes to implement modified sporting programs for older people in NSW. These programs provide older people with the opportunity to participate in lower impact versions of football, netball, gymnastics, softball, basketball and table tennis, tailored for different ability levels.
		Sport and recreation	SA	Strength for Life	www.cotasa.org.au/Programs/life/default.aspx	Offers regulated, supervised individualised progressive strength training for South Australians over 50 years (and over 40 for Aboriginal or Torres Strait Islanders) through accredited fitness providers. Participants can self-enrol or be referred directly by health and medical professionals and need to undergo a pre-exercise screening process. Strength for Life Aqua has also been introduced into multiple facilities with pools.
		Sport and recreation	VIC	Wheel Women	www.wheelwomenaustralia.com	Wheel Women is a social enterprise that provides a safe and supportive environment for women to participate in cycling. Offering opportunities from Learn To Ride up to skills for more advanced riders, the program engages women, particularly older women or women who do not usually exercise, in cycling with a regular ride calendar which provides rides for every level of rider. The focus is on the social aspect of cycling which promotes positive mental health outcomes, as well as the benefits of physical activity for women. WheelWomen is a supporter of VicHealth's This Girl Can campaign.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.4	**Older adults** (continued)	Communities and local government Sport and recreation	NSW	Staying Active	www.activeandhealthy.nsw.gov.au	NSW Health provides funding and support to exercise professionals for the development of sustainable PA programs for adults over the age of 50 years, across NSW. The Staying Active initiative aims to support adults over the age of 50 years to lead more active lives and reduce their risk of falls by increasing availability and accessibility of community-based PA opportunities.
		Communities and local government	NSW	Stepping On	www.steppingon.com/	Free community program (incorporating a group setting and individualised follow up) to prevent falls, encourage active living and maintain independence for older adults (65+ years) in NSW. It covers a range of issues including falls and risk, strength and balance exercises, home hazards, safe footwear, vision and falls, safety in public places, community mobility, coping after a fall, and understanding how to initiate a medication review. Training is offered for those who wish to facilitate classes.
3.5	**Least active:** Strengthen the development and implementation of programs and services across various community settings, that engage with and increase the opportunities for PA in the least active groups.	All domains	QLD	Activate! Queensland 2019-2029	www.hpw.qld.gov.au/about/strategy/sport/about	Activate! Queensland is Queensland's 10-year strategy that outlines a whole-of-government approach to increasing PA among Queenslanders of all ages and abilities, with a particular focus on reducing participation barriers and improving equity.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.5	**Least active** (continued)	Sport and recreation	NATIONAL	Better Ageing Grants Participation Grants	www.sportaus.gov.au/grants_and_funding/better_ageing www.sportaus.gov.au/grants_and_funding/participation	The Participation Grant Program and Better Ageing Grant Program aim to increase levels of physical activity among those who are least active (in the case of the Better Ageing grants, the focus is on older Australians). Objectives relate to building awareness and understanding of PA, improving access and opportunities for PA, and strengthening capability and capacity in the sector.
		Sport and recreation	National	Big Issue Community Street Soccer	www.thebigissue.org.au/community-street-soccer/about/	The Big Issue Street Soccer program runs in 16 locations across Australia and in one correction facility in Victoria. It offers weekly training sessions that provide a free, fun and safe environment for marginalised individuals to improve their health and fitness, make new friends and seek support and advice. Support staff work closely with players, linking them to services that address issues including homelessness, substance abuse, family breakdown and mental illness.
		Sport and recreation	National	Reclink Australia program	www.reclink.org/get-involved/participate	Reclink Australia's national program provides sport and recreation opportunities to the hardest-to-reach people in the community. It operates on a hub and spoke model involving collaboration with community groups, participant providers and organisations who can support sport programs (including representatives from community support groups, police, local council, youth justice). It is funded by the Department of Health, Preventative Health and Chronic Disease Support, and is delivered in 25 of the most disadvantaged communities across Australia.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.5	**Least active** (continued)	Sport and recreation	QLD	Get Out, Get Active funding	www.qld.gov.au/recreation/sports/funding/organisations/getoutgetactive	The Get Out, Get Active program provides funding for projects that will deliver community-based sport and recreation activities that increase opportunities for participation by women and girls who are either currently inactive, or would otherwise benefit from further participation.
		Sport and recreation	VIC	Access for All Abilities	sport.vic.gov.au/our-work/participation/inclusive-sport-and-recreation/access-all-abilities	Access for All Abilities (AAA) is a Victorian Government program coordinated by Sport and Recreation Victoria that funds state sporting associations, regional sports assemblies and other organisations to assist and support clubs and associations to provide more inclusive sport and recreation opportunities for people with a disability. The program also funds AAA Play, a free information and referral service delivered by Reclink Australia to connect Victorians with a disability with inclusive sport and recreation opportunities.
		Sport and recreation	VIC	Wheel Women	www.wheelwomenaustralia.com	Wheel Women is a social enterprise that provides a safe and supportive environment for women to participate in cycling. Offering opportunities from Learn To Ride up to skills for more advanced riders, the program engages women, particularly older women or women who do not usually exercise, in cycling with a regular ride calendar which provides rides for every level of rider. The focus is on the social aspect of cycling which promotes positive mental health outcomes, as well as the benefits of physical activity for women. WheelWomen is a supporter of VicHealth's This Girl Can campaign.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.5	**Least active** (continued)	Sport and recreation	NSW NT QLD SA TAS	Voucher schemes	sport.nsw.gov.au/sectordevelopment/activekids www.sportsvouchers.sa.gov.au www.qld.gov.au/recreation/sports/funding/fairplay www.nt.gov.au/leisure/sport/sport-voucher-scheme-urban/introduction www.communities.tas.gov.au/ticket-to-play	Various jurisdictions have implemented voucher schemes (up to $100 per child) to reduce the cost of participation in sport and recreation for eligible children. Eligibility and conditions for redemption vary between schemes.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.5	**Least active** (continued)	Sport and recreation	NSW	Regional Sport and Active Recreation Plans [draft]	sport.nsw.gov.au/draft-regional-sport-and-active-recreation-plans	Adopts a place-based approach to collaborating, planning and delivering sport and active recreation across the state regions of NSW. Each plan focuses on achieving outcomes that include: increasing participation of adults and children in regular sport and active recreation; improving access to sport and active recreation regardless of background or ability; and delivering fit-for-purpose facilities in the region. Recommendations are provided in each plan for activities that could be implemented in each region, providing a list of possibilities that can be prioritised by each region's Sport and Active Recreation Planning and Delivery Group.
		Sport and recreation	NSW	Dadee Program	www.dadee.org.au	The NSW Government is funding a statewide rollout of the University of Newcastle's lifestyle program 'Dads and Daughters Exercising and Empowered (DADEE)'. This program aims to help fathers to improve their daughters' PA levels, sport skills and social-emotional wellbeing. It forms a key component of a four-year multifaceted strategy to support female participation in sport called *Her Sport Her Way*. The program comprises a mix of education and practical sessions, with accompanying resources to support home-based activities.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.5	**Least active** (continued)	Sport and recreation	TAS	Get Active Program	www.wsrt.org.au/get-active	The Get Active Program (GAP) is a statewide initiative that aims to promote increased PA among people who are not currently physically active and who may have experienced barriers to PA. Participants take part in a 10-week series of two hour workshops, the first hour of which covers topics such as motivation, stress management, self-esteem, and goal setting, and the second hour of which is spent on fun physical activities which the group itself chooses. GAP has the flexibility to meet different group needs and has been run for refugee women, teenagers, older people, those who are rural and isolated, and people who have or at risk of developing diabetes. The program is run by Womensport and Recreation Tasmania and is funded by the Tasmanian Department of Health.
		Communities and local government	VIC	Let's Walk	www.victoriawalks.org.au/Lets-Walk/	The Let's Walk program is a program developed by VictoriaWalks in partnership with local councils, to encourage and support residents to discover walking routes in their communities and feel inspired to walk every day. One of the aspects of the program has involved mapping and marking out quality, safe and appealing neighbourhood walking routes so they are easy to follow. The program enables councils to deliver on a range of policy objectives across health, safety and community building and supports increased use of council's assets and infrastructure. Participating councils have included the City of Greater Bendigo, Maribyrnong City Council and City of Casey, with projects in Braybrook, Footscray, Yarraville, Lynbrook and Kangaroo Flat.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.6	**Whole-of-community:** Implement whole-of-community initiatives, at the city, town or local level, that stimulate engagement by all stakeholders and optimise a combination of policy approaches, across different settings, to promote increased participation in PA and reduced SB by people of all ages and diverse abilities, focusing on grassroots community engagement, co-development and ownership.	Communities and local government	NSW	Aboriginal Knockout Health Challenge	www.nswknockouthealthchallenge.com.au/	The NSW Aboriginal Knockout Health Challenge is a community-led healthy lifestyle and weight loss challenge for Aboriginal communities across NSW. The Challenge enables communities to take the lead on activities that will work for them, to make and lead a healthier lifestyle. The Challenge also aims to join up existing services and networks and build capacity in local communities to ensure that outcomes will be sustainable.
		Communities and local government	SA	Healthy Towns Challenge	www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/healthy+living/healthy+communities/sa+healthy+towns+challenge	The SA Healthy Towns Challenge is a grants program that provides funding to rural or regional towns to support the development of preventive health and wellbeing approaches within their community that provide measurable benefits to the community's health and wellbeing over 12 months. The Challenge is part of the SA government's Healthy Communities Program which supports community-wide health and prevention action to help reduce preventable disease and injury and improve health and wellbeing.

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
3.6	**Whole-of-community** (continued)	Communities and local government	TAS	Clarence City Council policy, infrastructure and events to enhance community health and wellbeing	www.healthyactivebydesign.com.au/case-studies/kangaroo-bay-skate-park-tasmania	Clarence City Council has been undertaking a range of activities to enhance community health and wellbeing, including development of strategic policies (e.g. a Community Health & Wellbeing Plan), design and delivery of improved walking and cycling routes (including the popular Clarence Foreshore Trail, a continuous waterside route for walking and bike riding, approximately 14.5 km in length) and high quality parks, open spaces and playgrounds often designed by an in-house team of landscape architects. Places and spaces are activated by Council-coordinated programs of events including Fitness in the Park and World Games Day. The Council has recently implemented a smoke-free zone around a beach, park and cricket oval at Bellerive to further enhance community health in public spaces. An example of facilities provided is presented in the Healthy Active by Design case study about the Kangaroo Bay Skate Park – weblink provided.
		Communities and local government	TAS	Healthy Tasmania Community Innovation Grants	www.dhhs.tas.gov.au/about_the_department/our_plans_and_strategies/a_healthy_tasmania/healthy_tasmania_community_innovations_grants	The Healthy Tasmania Community Innovation grants support community partnerships approaches to new and innovative activities that promote physical activity, healthy eating, and/or smoking cessation. All projects need to have a community connection focus.
		Communities and local government	TAS	Active Launceston	www.activelauncestion.com.au	Active Launceston is a community-driven partnership formed in 2008 between the University of Tasmania, Launceston City Council and Sport and Recreation Tasmania. The partnership aims to mobilise the community to increase their participation in PA by filling gaps in provision such as through free PA programs and events, providing pathways, reducing participation barriers and targeting those with

3	CREATE ACTIVE PEOPLE					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
						the highest need. The partnership also seeks to endorse, support and guide new and existing PA providers to enhance their service and their connection with the community.

ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; QLD =Queensland; SA = South Australia; TAS = Tasmania; VIC = Victoria; WA = Western Australia; PA = physical activity; SB = sedentary behaviour

[a] Programs were classified as 'National' if they are available in multiple states or territories in Australia.

[b] This is not intended to be an exhaustive capture of policies and programs against the WHO GAPPA actions, but to identify key examples in Australia that relate to WHO GAPPA actions.

GAPPA action area 4. Create active systems

4	CREATE ACTIVE SYSTEMS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
Strengthen leadership, governance, multisectoral partnerships, workforce, research, advocacy and information systems to support effective coordinated policy implementation.						
4.1	**Governance:** Strengthen policy frameworks, leadership and governance systems, at the national and subnational levels, to support implementation of actions aimed at increasing PA and reducing SB, including: multisectoral engagement and coordination mechanisms; policy coherence across sectors; guidelines; recommendations and action plans on PA and SB for all ages; and progress monitoring and evaluation to strengthen accountability.	All domains	National	Disability access and inclusion legislation	www.legislation.sa.gov.au/LZ/C/A/DISABILITY%20INCLUSION%20ACT%202018.aspx www.legislation.nsw.gov.au/#/view/act/2014/41/full www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_267_homepage.html	Various states (e.g. NSW, SA, WA) have enacted legislation to achieve whole-of-government planning and action in relation to reducing and removing barriers for people with disability (e.g. regarding access to sport or public transport facilities) and fostering a more accessible and inclusive community. This is generally achieved by requiring public authorities to develop disability access and inclusion plans (that meet certain requirements) and providing for accountability and reporting mechanisms.
		All domains	VIC SA WA	Public Health and Wellbeing Act 2008 (VIC) South Australian	www2.health.vic.gov.au/about/legislation/public-health-and-wellbeing-act www2.health.vic.gov.au/about/health-strategies/public-	Public health legislation in Victoria and South Australia require the periodic development of a state-level public health plan that identifies public health and wellbeing priorities for the state and helps guide local governments in the development of local public health plans. Western Australia has also introduced this requirement in its Public Health Act but the relevant provisions (Part 5) have not yet taken effect. Across these jurisdictions, the State plans must be

4	CREATE ACTIVE SYSTEMS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
4.1	**Governance** (continued)			Public Health Act (2011) Public Health Act 2016 (WA)	health-wellbeing-plan www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/about+us/legislation/public+health+act www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/about+us/legislation/public+health+act/state+public+health+plan ww2.health.wa.gov.au/Improving-WA-Health/Public-health/Public-Health-Act ww2.health.wa.gov.au/Improving-WA-Health/Public-health/Public-Health-Act/State-public-health-plan	consistent with the objects and principles of their respective Acts, which include a preventive health focus. The Victorian public health and wellbeing outcomes framework enables monitoring and reporting on collective efforts to improve health and wellbeing over the long term. The Outcomes framework provides a comprehensive set of public health and wellbeing outcomes, indicators, targets and measures for Victoria's major population health and wellbeing priorities and their determinants. Where data is available, the Outcomes framework also enables assessment of health and wellbeing inequalities.

4	CREATE ACTIVE SYSTEMS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
4.1	**Governance** (continued)	All domains	QLD	Health and Wellbeing Queensland Act 2019	www.legislation.qld.gov.au/view/html/asmade/act-2019-016	Established a statutory body Health and Wellbeing Queensland to improve the health and wellbeing of the Queensland population, reduce health inequity, and reduce the burden of chronic diseases through targeting risk factors such as physical inactivity. Health and Wellbeing Queensland is tasked with developing partnerships and collaborating with other entities to further this objective and its functions, monitor and evaluate disease prevention and health promotion activities, develop policy and advise government entities, and coordinate the exchange of information to prevent illness and promote health and wellbeing.
		All domains	SA	Health in all Policies (HiAP) approach	www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/about+us/about+sa+health/health+in+all+policies	Since 2007, the South Australian government has adopted a 'Health in All Policies' (HiAP) approach that aims to build strong cross-sectoral relationships across government departments and promote joined-up policy responses to address complex public policy issues. The approach uses a formal governance structure incorporating: a cross government mandate, central leadership, and a dedicated strategic HiAP team within SA Health that supports other agencies in applying HiAP to their targets.
		All domains	SA	Wellbeing SA	www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/about+us/wellbeing+sa+-	Work is underway to support the establishment of Wellbeing SA as an Attached Office to the Department for Health and Wellbeing. It is envisaged that Wellbeing SA will lead system change to embed prevention across the life course and disease continuum to improve physical, mental and social wellbeing and reduce the preventable burden of disease.

4	CREATE ACTIVE SYSTEMS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
4.1	**Governance** (continued)	All domains	TAS	Health and Wellbeing Advisory Council	www.dpac.tas.gov.au/divisions/policy/premiers_health_and_wellbeing_advisory_council	The Premier's Health and Wellbeing Council has been established to advise on cross-sectoral and collaborative approaches to improving the health and wellbeing of Tasmanians. Members come from diverse backgrounds, including government departments of Health, Premier and Cabinet, non-government organisations, and academia. In Aug 2019, the Tasmania Statement was signed committing the Tasmanian government to four key principles for collaboration on long term solutions to address social determinants of health: involving Tasmanians in decision-making; working across government and with communities on shared priorities; making decisions that benefit Tasmanians now and in the future; and measuring effectiveness.
		Urban design and infrastructure Transport and environment	National (and NZ)	Cycling and Walking Australia and New Zealand (CWANZ)	www.cwanz.com.au/about/	CWANZ is the Australasian peak group for walking and cycling on transport and recreation networks. Members include senior and executive level leaders from all Australian state and territory transport agencies, NZ transport agency, local government representatives, and leading advocacy bodies and peak bodies for walking, cycling, health and mobility. It provides a national forum to progress knowledge and innovation on strategic initiatives and projects that deliver outcomes in the national interest and which may not be delivered effectively by jurisdictions working alone. Its objectives include increasing the number of people walking and cycling as integral elements of liveable, healthy and productive communities; articulating the case for investment in walking and cycling from all levels of government; and achieving consistency and harmonisation across Australia and NZ on active transport.

4	CREATE ACTIVE SYSTEMS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
4.1	**Governance** (continued)	Urban design and infrastructure Transport and environment	VIC	Victoria Walks	www.victoriawalks.org.au/	Victoria Walks is the peak walking health promotion body in Victoria, established by VicHealth in 2009, to increase the number of people who walk as a means of transport and to promote supportive neighbourhoods and communities where people can and do choose to walk. The primary role of Victoria Walks is to lead the development of innovative ways to promote walking through partnerships, promotions, leadership, advocacy and events. Victoria Walks also provide resources and support to communities to make their neighbourhoods more connected and walking friendly.
		Urban design and infrastructure Transport and environment	NSW	Collaboration Areas	www.greater.sydney/project/collaboration-areas	The Greater Sydney Commission has been supporting councils, state agencies and stakeholders to deliver coordinated planning and investment in areas that have the potential to grow into centres of increased productivity and innovation. They are led by the Commission over a 12-month period and aim to address major issues for an area that inhibit growth and change, to achieve better outcomes including in relation to liveability and sustainability. Stakeholder groups typically include the local council, key agencies such as Transport for NSW, Health Infrastructure, the Local Health District, Department of Education and tertiary education institutions.

4	CREATE ACTIVE SYSTEMS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
4.1	**Governance** (continued)	Urban design and infrastructure Transport and environment	SA	30-Year Plan for Greater Adelaide	livingadelaide.sa.gov.au/	The State Planning Commission (an independent statutory body) plays a key role in helping to achieve improved whole-of-government coordination and partnership with councils for the successful implementation and monitoring of the 30-Year Plan for Greater Adelaide. Its responsibilities include ensuring alignment of the Plan with other strategic government plans and policies, ensuring a coordinated approach to land use planning and monitoring implementation and providing an annual report card on the progress of implementation of the Plan.
		Sport and recreation	VIC	Change our Game	changeourgame.vic.gov.au/	In December 2015, the Victorian Government released a report from the independent Inquiry into Women and Girls in Sport and Active Recreation. The report shed light on gender inequality in Victorian sports and recreation. The report outlined a way forward, helping change and improve sport and recreation for all involved. The establishment of the Victorian Office for Women in Sport and Recreation led to the development of the Change our Game initiative which aims to increase leadership capacity and opportunities for women and girls in the sport and active recreation sector. Components within the Change our Game initiative include: Scholarship Grants, Community Activation Grants, Champions of Change and Workforce Development Grants.

4	CREATE ACTIVE SYSTEMS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
4.2	**Data systems and surveillance capabilities:** Enhance data systems and capabilities at the national and, where appropriate, subnational level, to support: • Regular population surveillance of PA and SB, across all ages and multiple domains • Development and testing of new digital technologies to strengthen surveillance systems • Development of monitoring systems of wider sociocultural and environmental determinants of PA • Regular multisectoral monitoring and reporting on policy implementation to ensure accountability and inform policy and practice.	All domains	SA	State Public Health Indicator Framework	www.sahealth.sa.gov.au/wps/wcm/connect/Public+Content/SA+Health+Internet/About+us/Legislation/Public+Health+Act/State+Public+Health+Plan/Public+Health+Indicators	This Framework provides a broad set of indicators (including in relation to the built environment) to support monitoring and reporting on the implementation of the State Public Health Plan. The Framework (last updated in 2018) is intended to aid in public health planning, monitoring and evaluation and for the development of an evidence base for effective public health intervention. Data sources have been identified for most indicators. Principles require examining indicators whenever possible, according to disadvantage/inequity of health outcomes, health status of Aboriginal people and small geographic areas for planning purposes.

4	CREATE ACTIVE SYSTEMS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
4.2	**Data systems and surveillance capabilities** (continued)	All domains	VIC	Public Health and Wellbeing Outcomes Framework	www2.health.vic.gov.au/about/health-strategies/public-health-wellbeing-plan	The Outcomes framework provides a comprehensive set of public health and wellbeing outcomes, indicators, targets and measures for Victoria's major population health and wellbeing priorities and their determinants. Where data is available, the Outcomes framework also enables assessment of health and wellbeing inequalities. Shorter-term measures of change (connected to or contributing to longer term outcomes) are also being developed.
		Urban design and infrastructure Transport and environment	NSW	Pulse of Greater Sydney	www.greater.sydney/pulse-of-greater-sydney	The Pulse of Greater Sydney is a monitoring and reporting framework to monitor progress in delivering the vision for Greater Sydney and report on the progress of implementation of the Greater Sydney Region Plan by State and local government. It includes key indicators on Walkable Places (measured by walkability and level of pedestrian activity) and 30-Minute Cities (measured by access to strategic centres by public transport and walking). The Greater Sydney Dashboard is an accompanying interactive tool that provides a single point of access to a wide range of data sources to help monitor changes across Greater Sydney.
4.3	**Research and evaluation capacity:** Strengthen the national and institutional research and evaluation capacity and stimulate the application of digital technologies and innovation to accelerate the development and implementation of effective policy solutions aimed at increasing PA and reducing sedentary behaviour.	All domains	National	The Australian Prevention Partnership Centre (the Prevention Centre)	preventioncentre.org.au/about-us/	The Australian Prevention Partnership Centre is a national collaboration of researchers, policy makers and practitioners who work together to develop and provide evidence and tools for a comprehensive, systemic, cross-sectoral approach to preventing chronic health problems by addressing key risk factors that include physical inactivity.

4	CREATE ACTIVE SYSTEMS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
4.3	**Research and evaluation capacity** (continued)	All domains	NSW	Physical Activity Nutrition and Obesity Research Group (PANORG)	www.health.nsw.gov.au/research/Pages/population-health-research-strategy.aspx	The Physical Activity Nutrition and Obesity Research Group (PANORG) supports the Centre for Population Health at the NSW Ministry of Health as well as other government agencies, to: • Facilitate the generation of high-quality policy relevant research in PA, nutrition and obesity prevention to support population health policy and inform programs and practice • Maximise the use of research evidence related to PA, nutrition and obesity prevention to improve population health and reduce inequities • Build research capability of policy makers and practitioners working in PA, nutrition and obesity prevention.
		All domains	NSW	Evidence and Evaluation Guidance Series	www.health.nsw.gov.au/research/Pages/population-health-guidance-series.aspx	The Population and Public Health Division of the NSW Ministry of Health produces and disseminates best practice guides to assist population health policy makers, practitioners and researchers to commission, undertake and use policy-relevant research. These include guidance on commissioning economic evaluations, developing and using program logic, commissioning evaluation services, and scaling up evidence-based population health interventions.

4	CREATE ACTIVE SYSTEMS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
4.3	**Research and evaluation capacity** (continued)	All domains	SA	Public Health Partner Authorities	www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/about+us/about+sa+health/health+in+all+policies/public+health+partner+authorities	The SA Public Health Plan and SA Public Health Act 2011 give formal recognition to Public Health Partner Authorities (PHPAs), which can be government agencies, NGOs, universities, and private sector enterprises, that negotiate a partnership agreement with the Department of Health and Ageing to take collaborative action on an issue of mutual interest to improve population health and wellbeing. In most cases, the agreement will recognise existing action and seek agreement for entities to extend beyond their current actions to improve public health and wellbeing. Benefits for the PHPA may include: formal acknowledgment of the entity's role towards health and wellbeing; clear identification of co-benefits; sharing of 'in kind' resources in times of economic constraint; access to health knowledge, expertise and information; and joint identification of strategic policy opportunities.
4.4	**Advocacy:** Escalate advocacy efforts to increase awareness, knowledge and joint action at the global, regional and national levels, targeting key audiences including high level leaders, policy makers across multiple sectors, the media, private sector, city and community leaders, and the wider community.	All domains	National	National Heart Foundation	www.heartfoundation.org.au/for-professionals/physical-activity/blueprint-for-an-active-australia	In 2019, the National Heart Foundation released an update to its *Blueprint for an Active Australia*, outlining recommendations across multiple domains (including healthcare, transport, environment, education and planning) and subpopulation groups, to improve PA at the population level.

4	CREATE ACTIVE SYSTEMS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description
4.4	**Advocacy** (continued)	Urban design and infrastructure Transport and environment	National (and NZ)	Cycling and Walking Australia and New Zealand (CWANZ)	www.cwanz.com.au/	CWANZ is the Australasian peak group for walking and cycling on transport and recreation networks. Members include senior and executive level leaders from all Australian state and territory transport agencies, NZ transport agency, local government representatives, and leading advocacy bodies and peak bodies for walking, cycling, health and mobility. Its objectives include contributing knowledge and data to build the case for investment in walking and cycling.
		Sport and recreation Education Urban design and infrastructure Transport and environment	National	Active Healthy Kids Australia	www.activehealthykidsaustralia.com.au/	Active Healthy Kids Australia (AHKA) is a collaboration of PA researchers across Australia who advocate for a coordinated national response to increasing PA among children and young Australians, using Report Cards as the main vehicle for driving policy change across various sectors. AHKA is part of the Active Healthy Kids Global Alliance which consists of 38 countries, allowing comparisons with the rest of the world.
4.5	**Resources:** Strengthen financing mechanisms to secure sustained implementation of national and subnational action and the development of the enabling systems and support the development and implementation of policies aimed at increasing PA and reducing SB.	All domains				

4	CREATE ACTIVE SYSTEMS					
	Recommended actions from GAPPA	Related domains/ settings	Jurisdiction[a]	Examples[b]	Weblink	Description

ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; QLD =Queensland; SA = South Australia; TAS = Tasmania; VIC = Victoria; WA = Western Australia; PA = physical activity; SB = sedentary behaviour

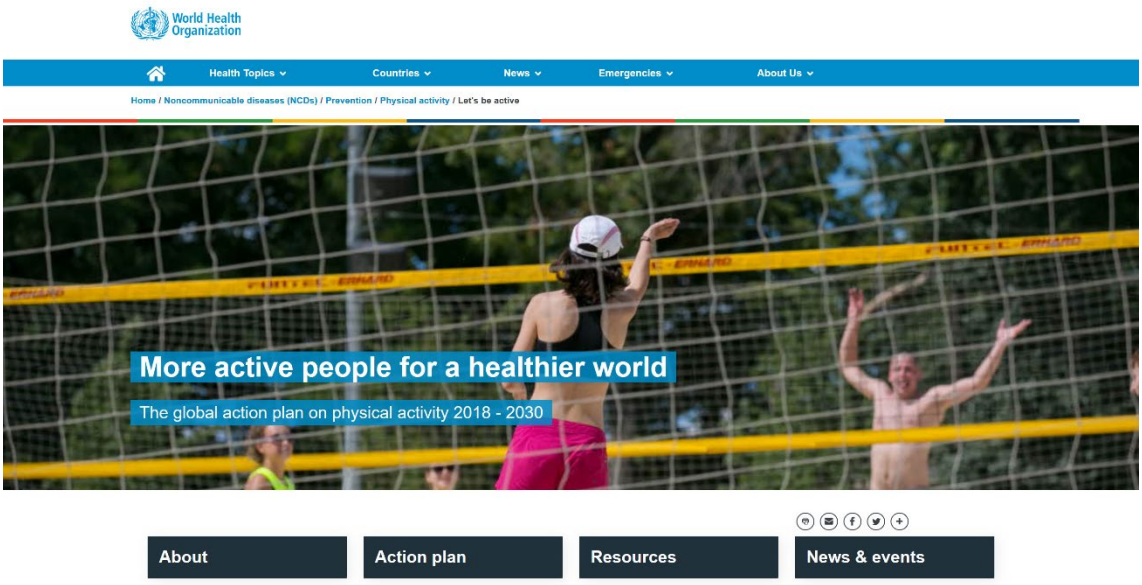
[a] Programs were classified as 'National' if they are available in multiple states or territories in Australia.

[b] This is not intended to be an exhaustive capture of policies and programs against the WHO GAPPA actions, but to identify key examples in Australia that relate to WHO GAPPA actions.

Appendix 4. WHO Global action plan on physical activity 2018

The WHO Global Action Plan on Physical Activity 2018–2030 (WHO GAPPA) is available online in full report format and as an 'at-a-glance' brochure.

There is a dedicated campaign website for GAPPA (home page shown below) and video (shown below).



About | Action plan | Resources | News & events

Regular physical activity is proven to help prevent and treat noncommunicable diseases (NCDs) such as heart disease, stroke, diabetes and breast and colon cancer. It also helps prevent hypertension, overweight and obesity and can improve mental health, quality of life and well-being. Yet, much of the world is becoming less active.

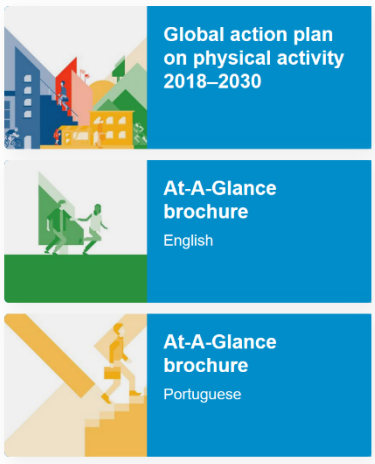
WHO has developed a new global action plan to help countries scale up policy actions to promote physical activity. It responds to the requests by countries for updated guidance, and a framework of effective and feasible policy actions to increase physical activity at all levels.

The plan sets out four objectives and recommends 20 policy actions that are applicable to all countries and address the cultural, environmental and individual determinants of inactivity.

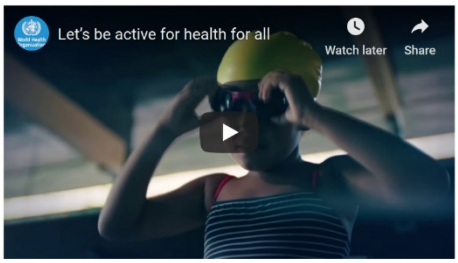
A key feature of this new plan is its call for a "systems-based" approach where effective implementation will require bold leadership combined with cross-government and multisectoral partnerships at all levels to achieve a coordinated, whole-of-system response.

Working in partnerships, WHO will support countries to implement a whole-of-community approach to increase levels of physical activity in people of all ages and abilities. Global, regional and national coordination and capacity will be strengthened to respond to needs for technical support, innovation and guidance.

Document download



Let's be active: Everyone, everywhere, everyday



Appendix 5. Online resources

The following resources have been organised according to the eight domains for intervention in the physical activity (PA) systems map and some of the key enablers regarding governance, evaluation and surveillance (see Chapter 2.2).

Community-wide programs

COMMUNITY-WIDE PROGRAMS		
Name of resource	**Description**	**Link**
The Community Guide (PA): Community-Wide Campaigns	Sets out the findings and rationale of the US Community Preventive Services Task Force in recommending community-wide campaigns to increase PA among adults and children.	www.thecommunityguide.org/findings/physical-activity-community-wide-campaigns
NICE Guideline [NG44]: Community engagement – Improving health and wellbeing and reducing health inequalities	Prepared by the National Institute for Health and Care Excellence (NICE), this guidance covers community engagement approaches to reduce health inequalities.	www.nice.org.uk/guidance/ng44
Public Health England: Whole systems approach to obesity guide to support local approaches to promoting a healthy weight	This guide has been developed by Public Health England to support local governments and their partners to create and implement whole systems approaches at the local level to address obesity and promote a healthy weight. The guide outlines a six-phase process with each phase providing practical support and accompanying resources.	www.gov.uk/government/publications/whole-systems-approach-to-obesity
Trust for America's Health: A Compendium of Proven Community-Based Prevention Programs	This is a Compendium of Proven Community-Based Prevention Programs from around the world, which highlights 79 evidence-based disease and injury prevention programs, including those that increase PA (which are described under the goals of reducing risk of cardiovascular disease, stroke and diabetes, and reducing falls).	www.tfah.org/report-details/a-compendium-of-proven-community-based-prevention-programs/

Mass media and public education

MASS MEDIA AND PUBLIC EDUCATION		
Name of resource	Description	Link
The Community Guide (PA): Health Communication and Social Marketing: Campaigns That Include Mass Media and Health-Related Product Distribution	Sets out the findings and rationale of the US Community Preventive Services Task Force in recommending multi-channel health communication campaigns and distribution of free or reduced-price health-related products.	www.thecommunityguide.org/findings/health-communication-and-social-marketing-campaigns-include-mass-media-and-health-related
US CDC: Gateway to Health Communication and Social Marketing Practice	Portal developed by the US Centers for Disease Control and Prevention that contains tools, guidelines and best practices in health communication and social marketing.	www.cdc.gov/healthcommunication/index.html
US CDC: The health communicator's social media toolkit	Toolkit developed by the US Centers for Disease Control and Prevention on using social media for health communication.	www.cdc.gov/socialmedia/tools/guidelines/socialmediatoolkit.html
ECDC: Social media strategy development	Technical guide from the European Centre for Disease Prevention and Control on using social media for public health communication. This Guide may be of greater interest to those commencing with basic practice (the pragmatic 10-steps).	www.ecdc.europa.eu/en/publications-data/social-media-strategy-development-guide-using-social-media-public-health
ECDC: Social Marketing Guide	Technical guide from the European Centre for Disease Prevention and Control on using social marketing for public health. This Guide may be of greater interest for the FLOWPROOF approach.	www.ecdc.europa.eu/en/publications-data/social-marketing-guide-public-health-programme-managers-and-practitioners

MASS MEDIA AND PUBLIC EDUCATION		
Name of resource	Description	Link
National Heart Foundation Blueprint for an Active Australia: Mass-media strategy	Sets out recommendations for an integrated and sustained mass media strategy that is complemented by community-wide activities and programs to promote increased PA in the population.	www.heartfoundation.org.au/images/uploads/publications/Blueprint

Sport and recreation

SPORT AND RECREATION		
Name of resource	Description	Link
Sport England	Sport England's website contains many useful guides, tools and resources to promote increased PA particularly among subgroups who are currently underrepresented in England.	www.sportengland.org/
Clearinghouse for Sport and PA: Sport Participation	Contains a range of expert evaluated information resources covering good and promising practice in PA within the sport domain. Full access to content is limited to members (sign-up is free).	www.clearinghouseforsport.gov.au/knowledge_base/sport_participation
Sport Australia: Participation drivers	Sport Australia's toolkit to support organisations with improving sport participation outcomes, based around a set of drivers identified by stakeholders as the most significant influences on positive participation outcomes.	www.sportaus.gov.au/participation_drivers?utm_medium=email&utm_campaign=Sport%20Australia%20Industry%20News%202&utm_content=Sport%20Australia%20Industry%20News%202+CID_2dfc358f49417c9afe34cea170966fb9&utm_source=Campaign%20Monitor&utm_term=Drivers%20of%20Participation
National Heart Foundation Blueprint for an Active Australia:	Sets out recommendations for policies to promote sport and active recreation, with implications for the sport and recreation, built environment, and education domains.	www.heartfoundation.org.au/images/uploads/publications/Blueprint

SPORT AND RECREATION		
Name of resource	**Description**	**Link**
Sport and active recreation		

Education

EDUCATION		
Name of resource	**Description**	**Link**
CDC Health Equity Guide: Physical activity opportunities in school, afterschool, and early care and education settings	Provides a guide for designing, implementing and evaluating PA strategies for children in school, afterschool, and early care and education settings to maximise health impact and advance health equity.	www.cdc.gov/nccdphp/dnpao/state-local-programs/health-equity-guide/pdf/health-equity-guide/Health-Equity-Guide-sect-4-4.pdf
CDC Health Equity Guide – Joint use agreements	Provides a guide for designing, implementing and evaluating joint use agreements to maximise health impact and advance health equity.	www.cdc.gov/nccdphp/dnpao/state-local-programs/health-equity-guide/pdf/health-equity-guide/Health-Equity-Guide-sect-4-1.pdf
Clearinghouse for Sport and PA: Sport and government policy objectives (PA) – Education	Summarises and provides links to relevant programs, reports, research and resources to promote PA in the education domain.	www.clearinghouseforsport.gov.au/knowledge_base/organised_sport/sport_and_government_policy_objectives/physical_activity_guidelines

EDUCATION		
Name of resource	Description	Link
Clearinghouse for Sport and PA: Sport in education	Summarises and provides links to Australian government programs, policies and other initiatives to promote PA in the education domain, as well as relevant research and reports on benefits and shared access to facilities.	www.clearinghouseforsport.gov.au/knowledge_base/organised_sport/value_of_sport/school_sport
National Heart Foundation Blueprint for an Active Australia: Children and adolescents	Sets out recommendations for strategies and approaches to increase opportunities for children and young people to be physically active including in relation to education settings.	www.heartfoundation.org.au/images/uploads/publications/Blueprint
NICE Public Health Guideline [NG90] – Physical activity and the environment	Prepared by the National Institute for Health and Care Excellence (NICE) together with Public Health England, this guidance covers how to improve the physical environment (including in schools) to encourage and support PA.	www.nice.org.uk/guidance/ng90
The Community Guide (PA): Interventions to increase active travel to schools	Sets out the findings and rationale of the US Community Preventive Services Task Force in recommending interventions to increase active travel to school.	www.thecommunityguide.org/findings/physical-activity-interventions-increase-active-travel-school
The Community Guide (PA): Enhanced School-Based Physical Education	Sets out the findings and rationale of the US Community Preventive Services Task Force in recommending enhanced school-based physical education to increase PA.	www.thecommunityguide.org/findings/physical-activity-enhanced-school-based-physical-education

Primary and secondary healthcare

PRIMARY AND SECONDARY HEALTHCARE		
Name of resource	**Description**	**Link**
Clearinghouse for Sport and PA: Sport and government policy objectives (PA) – Healthcare	Summarises and provides links to relevant programs, reports, research and resources to promote PA in the healthcare domain.	www.clearinghouseforsport.gov.au/knowledge_base/organised_sport/sport_and_government_policy_objectives/physical_activity_guidelines
National Heart Foundation Blueprint for an Active Australia: Health care	Sets out recommendations for policies and interventions to support the integration of PA into primary care.	www.heartfoundation.org.au/images/uploads/publications/Blueprint/Blueprint_Health_care.pdf
NICE Public Health Guideline [PH44]: Physical activity – brief advice for adults in primary care	Prepared by the National Institute for Health and Care Excellence (NICE), this guidance covers brief advice on PA to adults in primary care. It is primarily aimed at practitioners.	www.nice.org.uk/guidance/ph44
NICE Public Health Guideline [PH54]: Physical activity – exercise referral schemes	Prepared by the National Institute for Health and Care Excellence (NICE), this guidance covers exercise referral schemes for adults, particularly those who are inactive or sedentary. Recommendations 1 and 2 are directed at policy makers.	www.nice.org.uk/guidance/ph54
WHO Europe: Integrating diet, PA and weight management services into primary care	Developed by the Regional Office for Europe of the WHO, this publication provides guidance on the evidence, challenges and entry points for integrating diet, PA and weight management services into primary care.	www.euro.who.int/en/health-topics/disease-prevention/physical-activity/publications/2016/integrating-diet,-physical-activity-and-weight-management-services-into-primary-care-2016

PRIMARY AND SECONDARY HEALTHCARE		
Name of resource	Description	Link
WHO Europe: Health–enhancing PA promotion in healthcare settings	This webpage presents the work of HEPA Europe Working Group on PA promotion in health care settings. Publications include a report that captures the key enablers, barriers and lessons learnt from case studies in Europe and elsewhere of healthcare interventions to support PA promotion in these settings.	www.euro.who.int/en/health-topics/disease-prevention/physical-activity/activities/hepa-europe/hepa-europe-projects-and-working-groups/hepa-promotion-in-health-care-settings

Workplaces

WORKPLACES		
Name of resource	Description	Link
National Heart Foundation Blueprint for an Active Australia: Workplaces	Sets out recommendations for policies and interventions to promote PA in the workplace domain.	www.heartfoundation.org.au/images/uploads/publications/Blueprint/Blueprint_Workplaces.pdf
NICE Guideline [PH13]: Physical activity in the workplace	Prepared by the National Institute for Health and Care Excellence (NICE), this guidance covers how to encourage employees to be physically active. It is primarily aimed at employers, industry bodies and associations, and strategic partnerships.	www.nice.org.uk/guidance/PH13
CDC Physical Activity: Worksite Physical Activity	Provides links to several resources on promoting PA in workplaces, including a resource developed by ChangeLab Solutions on government policies that support PA in and around the workplace.	www.cdc.gov/physicalactivity/worksite-pa/index.htm
The Community Guide (PA): Worksite programs	Sets out the findings and rationale of the US Community Preventive Services Task Force in recommending worksite programs to improve diet or PA and reduce weight among employees.	www.thecommunityguide.org/findings/obesity-worksite-programs

Transport and environment

TRANSPORT AND ENVIRONMENT		
Name of resource	**Description**	**Link**
CDC Health Equity Guide: Trails and pathways to enhance recreation and active transportation	Provides a guide for designing, implementing and evaluating trail and pathway strategies to maximise health impact and advance health equity.	www.cdc.gov/nccdphp/dnpao/state-local-programs/health-equity-guide/pdf/health-equity-guide/Health-Equity-Guide-sect-4-3.pdf
Clearinghouse for Sport and PA: Active Transport	Summarises key data and benefits of active transport, and Australian and international initiatives. Full access to content is limited to members (sign up is free).	www.clearinghouseforsport.gov.au/knowledge_base/organised_sport/sport_and_government_policy_objectives/active_transport
Clearinghouse for Sport and PA: Sport and government policy objectives (PA) – Environment	Summarises and provides links to relevant policies, programs, reports and research to promote PA in the environment domain.	www.clearinghouseforsport.gov.au/knowledge_base/organised_sport/sport_and_government_policy_objectives/physical_activity_guidelines
National Heart Foundation Blueprint for an Active Australia: Active travel	Sets out recommendations for policies and interventions to promote active travel, with implications for the built environment, transport, workplace and education domains.	www.heartfoundation.org.au/images/uploads/publications/Blueprint/Blueprint_Active_travel.pdf
NICE Public Health Guideline [PH41]: Physical activity – walking and cycling	Prepared by the National Institute for Health and Care Excellence (NICE), this guidance covers walking and cycling as forms of transport and includes recommendations on policy and program planning in the health, transport, education and other sectors.	www.nice.org.uk/guidance/PH41/chapter/1-Recommendations#policy-and-planning
NICE Public Health Guideline [NG90]: Physical	Prepared by the National Institute for Health and Care Excellence (NICE) together with Public Health England, this guidance covers how to improve the physical	www.nice.org.uk/guidance/ng90

TRANSPORT AND ENVIRONMENT		
Name of resource	Description	Link
activity and the environment	environment to encourage and support PA including recommendations on policies, active travel, public open spaces, buildings and schools.	
CDC Physical Activity: Community Strategies	Package of resources prepared by the US Centers for Disease Control and Prevention that includes real-world examples, implementation resource guide and visual guide for implementing built environment improvements to increase PA (by creating activity friendly routes and everyday destinations).	www.cdc.gov/physicalactivity/community-strategies/beactive/index.html
The Community Guide (PA): Interventions to increase active travel to schools	Sets out the findings and rationale of the US Community Preventive Services Task Force in recommending interventions to increase active travel to school.	www.thecommunityguide.org/findings/physical-activity-interventions-increase-active-travel-school
The Community Guide (PA): Built Environment Approaches Combining Transportation System Interventions with Land Use and Environmental Design	Sets out the findings and rationale of the US Community Preventive Services Task Force in recommending built environment strategies that combine transportation system interventions with land use and environmental design to increase PA.	www.thecommunityguide.org/findings/physical-activity-built-environment-approaches
PASTA (Physical Activity Through Sustainable Transport Approaches)	This is the website of the EU-funded project PASTA – Physical Activity Through Sustainable Transport Approaches. It contains useful resources including suggested indicators, recommendations for how to better link transport and health, practical online HEAT tool (for economic assessment of the health effects from cycling and walking), and research, reports and case studies.	www.pastaproject.eu/about/

TRANSPORT AND ENVIRONMENT		
Name of resource	Description	Link
University of Leeds: KonSULT (Knowledgebase on Sustainable Urban Land use and Transport)	Developed since 2001 with support from the European Commission, the UK Department for Transport, the UK Engineering and Physical Sciences Research Council and the Rees Jeffreys Road Fund, this website aims to assist policy makers, professionals and interest groups to understand the challenges of achieving sustainability in urban transport, and to identify appropriate policy measures and packages. It is regularly updated to reflect recent research.	www.konsult.leeds.ac.uk/what-is-konsult/
Victoria Transport Policy Institute: Online Transportation Demand Management (TDM) Encyclopedia	Produced by the Victoria Transport Policy Institute (an independent research institution located in Canada), this is a comprehensive resource to support the planning, implementation and evaluation of policies and programs for transportation demand management to achieve objectives such as health and fitness, equity, liveability, transport affordability, safety and parking management.	www.vtpi.org/tdm/tdm102.htm

Urban design and infrastructure

URBAN DESIGN AND INFRASTRUCTURE		
Name of resource	Description	Link
Healthy Urban Development Checklist	The checklist is a practical tool for NSW health professionals and others outside the health sector. It is designed to assist engagement with the planning and development process and support feedback on development policies and plans. It offers a standardised way to evaluate built environment factors that affect health and suggests ways to reduce negative impacts and improve health outcomes for a wide range of health determinants. These include education, employment, housing, social networks and relationships, air quality, food and access to social infrastructure and healthcare.	www.health.nsw.gov.au/urbanhealth/Publications/healthy-urban-dev-check.pdf

URBAN DESIGN AND INFRASTRUCTURE		
Name of resource	Description	Link
CDC Health Equity Guide - Safe and accessible streets for all users	Provides a guide for designing, implementing and evaluating street infrastructure and transportation strategies to maximise health impact and advance health equity.	www.cdc.gov/nccdphp/dnpao/state-local-programs/health-equity-guide/pdf/health-equity-guide/Health-Equity-Guide-sect-4-2.pdf
CDC Health Equity Guide – Neighbourhood development that connects community resources to transit	Provides a guide for designing, implementing and evaluating transit-oriented development and mixed-use zoning strategies to maximise health impact and advance health equity.	www.cdc.gov/nccdphp/dnpao/state-local-programs/health-equity-guide/pdf/health-equity-guide/Health-Equity-Guide-sect-4-5.pdf
Heart Foundation: Healthy Active by Design	Portal that provides guidance, resources and case studies to support the creation of more active built environments in Australia.	healthyactivebydesign.com.au/
National Heart Foundation Blueprint for an Active Australia: Built environments	Sets out recommended design considerations for planning for health and wellbeing, and interventions to enable more active and liveable environments.	www.heartfoundation.org.au/images/uploads/publications/Blueprint/Blueprint_Built_Environment.pdf
NSW Office of Sport: Community Sport Infrastructure Resource Library	Practical resource to assist in the planning, design and construction of innovative, sustainable and fit for purpose community sporting infrastructure. Includes a web portal which provides a collection of resources to assist with best practice design specification for community sporting infrastructure.	sport.nsw.gov.au/aboutus/SIG/resource-library
NICE Public Health Guideline [NG90]: Physical activity and the environment	Prepared by the National Institute for Health and Care Excellence (NICE) together with Public Health England, this guidance covers how to improve the physical environment to encourage and support PA including recommendations on policies, active travel, public open spaces, buildings and schools.	www.nice.org.uk/guidance/ng90

URBAN DESIGN AND INFRASTRUCTURE		
Name of resource	Description	Link
CDC Physical Activity: Community Strategies	Package of resources prepared by the US Centers for Disease Control and Prevention that includes real-world examples, implementation resource guide and visual guide for implementing built environment improvements to increase PA (by creating activity friendly routes and everyday destinations).	www.cdc.gov/physicalactivity/community-strategies/index.htm
WHO Europe: Towards more physical activity – Transforming public spaces to promote physical activity	Developed by the Regional Office for Europe of the WHO , this publication focuses on how PA can be supported through urban planning.	www.euro.who.int/en/health-topics/disease-prevention/physical-activity/publications/2017/towards-more-physical-activity-transforming-public-spaces-to-promote-physical-activity-a-key-contributor-to-achieving-the-sustainable-development-goals-in-europe-2017
The Community Guide (PA): Built Environment Approaches Combining Transportation System Interventions with Land Use and Environmental Design	Sets out the findings and rationale of the US Community Preventive Services Task Force in recommending built environment strategies that combine transportation system interventions with land use and environmental design to increase PA.	www.thecommunityguide.org/findings/physical-activity-built-environment-approaches
University of Leeds: KonSULT (Knowledgebase on Sustainable Urban Land use and Transport)	Developed since 2001 with support from the European Commission, the UK Department for Transport, the UK Engineering and Physical Sciences Research Council and the Rees Jeffreys Road Fund, this website aims to assist policy makers, professionals and interest groups to understand the challenges of achieving sustainability in urban transport, and to identify appropriate policy measures and packages. It is regularly updated to reflect recent research.	www.konsult.leeds.ac.uk/what-is-konsult/
Victoria Transport Policy Institute: Online Transportation Demand	Produced by the Victoria Transport Policy Institute (an independent research institution located in Canada), this is a comprehensive resource to support the planning, implementation and evaluation of policies and programs for	www.vtpi.org/tdm/tdm102.htm

URBAN DESIGN AND INFRASTRUCTURE		
Name of resource	Description	Link
Management (TDM) Encyclopedia	transportation demand management to achieve objectives such as health and fitness, equity, liveability, transport affordability, safety and parking management.	

Governance, leadership and knowledge mobilisation

GOVERNANCE, LEADERSHIP AND KNOWLEDGE MOBILISATION		
Name of resource	Description	Link
National Heart Foundation Blueprint for an Active Australia: Research and program evaluation	Sets out recommendations to ensure the development, delivery and demonstrated effectiveness of PA programs and policies.	www.heartfoundation.org.au/images/uploads/publications/Blueprint/Blueprint_Research_and_program_evaluation.pdf
Obesity Collective: Obesity Activity Map	The Obesity Collective is a modern movement to drive action on important obesity initiatives in Australia. The Activity Map provides a searchable and continuously updated table of activities (policies, programs and other initiatives) in Australia that are aimed at increasing physical activity, whether by targeting individual behaviours and/or increasing opportunities for PA.	www.obesityaustralia.org/obesity-activity-map
Obesity Evidence Hub	The Obesity Evidence Hub is a joint project arising from the work of the Obesity Collective and resulting from a partnership between the Cancer Council Victoria, Bupa Health Foundation and the Obesity Policy Coalition. This online hub identifies, analyses and synthesises key evidence on obesity, to help drive policy action in Australia. The first stage of the hub covers obesity trends, impacts and prevention; additional topics will cover treatment and environmental influences.	obesityevidencehub.org.au

GOVERNANCE, LEADERSHIP AND KNOWLEDGE MOBILISATION		
Name of resource	Description	Link
WHO Toolkit for developing, implementing and evaluating the National Multisectoral Action Plan (MAP) for NCD Prevention and Control	Covers main steps from situation assessment, stakeholder engagement, to implementation and monitoring and evaluation. Includes practical templates and examples	apps.who.int/nmh/ncd-map-toolkit/
Bridge Collaborative Global: Resources for cross-sector planning and evaluation	Provides a range of practical tools and resources to support better planning and evaluation of intersectoral policy action.	bridgecollaborativeglobal.org/what-we-do/plan/
Politics & Ideas: Context matters. A framework to support knowledge into policy	Provides an interactive framework and supporting resources to help government agencies improve their use of knowledge for policy making by understanding context.	cm.politicsandideas.org/homepage

Surveillance and monitoring

SURVEILLANCE AND MONITORING		
Name of resource	Description	Link
AIHW: Data sources for monitoring overweight and obesity	Identifies existing data sources in Australia for monitoring overweight and obesity, including individual and environment risk factors relating to PA. Summarises data gaps and limitations, and opportunities for improving monitoring. Refer to appendices for measures of PA, and an assessment of the equity focused monitoring capabilities of the data sources.	www.aihw.gov.au/reports/overweight-obesity/data-sources-for-monitoring-overweight-and-obesity/contents/table-of-contents

SURVEILLANCE AND MONITORING		
Name of resource	**Description**	**Link**
Australian Health Policy Collaboration: Australian Health Tracker	Provides a series of resources to support a comprehensive assessment of Australia's health in relation to chronic disease and risk factors. The resources include an interactive website and national report cards to help track progress towards Australia's chronic disease targets for 2025 (which includes a 10% reduction in insufficient PA).	www.atlasesaustralia.com.au/ahpc/
Active Healthy Kids Australia	Active Healthy Kids Australia (AHKA) is a collaboration of PA researchers across Australia who advocate for a coordinated national response to increasing PA among children and young Australians, using Report Cards as the main vehicle for driving policy change across various sectors.	www.activehealthykidsaustralia.com.au/
Global Observatory for PA	Contains a repository of standardised country cards based on common indicators and sources to enable cross-country comparisons on physical activity and provide data for countries to initiate or improve standards, policies, program development and evaluation.	www.globalphysicalactivityobservatory.com/
Global Health Observatory (GHO) data	Prevalence data of insufficient PA by country, WHO region, and World Bank income group – for adults 18+ years and school-going adolescents 11–17 years.	www.who.int/gho/ncd/risk_factors/physical_activity/en/
RMIT Australian Urban Observatory	Digital platform developed by RMIT's Healthy Liveable Cities Group that enables policy makers and planners to access a wide range of liveability indicators relating to the built environment. The Observatory provides information and understanding to support resource allocation, future policy action and support to create equitable, healthy and liveable places.	auo.org.au/

Appendix 6. Australian Systems Approaches to Physical Activity

The University of Sydney and The Australian Prevention Partnership Centre

The Australian Systems Approaches to Physical Activity (ASAPa) is a national project that aims to contribute a practical focus towards implementing a whole systems approach to physical activity (PA) at the population level. The project commenced in February 2018. Funding for the research has been provided from the Federal Government's Medical Research Future Fund (MRFF)

Key activities to date:

- Mapping of policies, programs and prevalence metrics at the state, territory and federal level
- Evidence synthesis and dissemination of knowledge for systems approaches to PA (Getting Australia Active III)
- Stakeholder engagement through national workshops and PA networks

Key outputs

1. Project overview and conceptual systems map for PA in Australia
   - Bellew W, Smith BJ, Nau T, Lee K, Reece L, Bauman A. Whole-of-systems approaches to physical activity policy and practice in Australia: The ASAPa project overview and initial systems map. J Phys Act Health. 2019;17(1):68-73. doi:10.1123/jpah.2019-0121
   - Bellew W. Conceptual systems map for physical activity in Australia [YouTube presentation] This short 2-minute video explains the components of a conceptual systems map for physical activity in Australia. www.youtube.com/watch?v=ZOrUWzWddo4&feature=youtu.be
2. Mapping of PA policies
   - Nau T, Lee K, Smith Ben J, Bellew W, Reece L et al. Toward whole-of-system action to promote for physical activity: A cross-sectoral analysis of physical activity policy in Australia. J Phys Act Health. 2019;16:1029–38. doi:10.1123/jpah.2019-0122
3. Mapping of PA programs
   - Nau T. The physical activity landscape in Australia: Mapping physical activity programs [YouTube presentation] This presentation details findings from an audit of population level programs and large-scale interventions promoting physical activity across multiple sectors, states and territories, as well as nationally. www.youtube.com/watch?v=YsItH4ShSOo&feature=youtu.be
4. Podcast
   - Prevention Works podcast with Professor Adrian Bauman, tackling how to get Australians moving each and every day. preventioncentre.org.au/resources/tackling-how-to-get-australians-moving-each-and-every-day/

For further information, visit the ASAPa project webpage on the Prevention Centre website: preventioncentre.org.au/our-work/research-projects/employing-physical-activity-to-prevent-chronic-disease/

Glossary

ABS	Australian Bureau of Statistics
AL	adult learning
AIHW	Australian Institute of Health and Welfare
AKHK	Active Kids Healthy Kids
ALbD	Active Living by Design
ASAPa	Australian Systems Approaches to Physical Activity
AT	Active transport
BRFSS	Behavioral Risk Factor Surveillance System
CDC	Centers for Disease Control and Prevention
CEA	cost effectiveness analysis
CoP	community of practice
CPSTF US	Community Preventive Services Task Force
DALY	Disability-Adjusted Life Year
ERASS	Exercise, Recreation and Sport Survey
FMS	Fundamental Movement Skills
GAPPA	Global Action Plan on Physical Activity 2018 – 2030
GP	general practitioner
GPAQ	Global Physical Activity Questionnaire
GRPs	Gross Rating Points
HiAP	health in all policies
ICER	incremental cost effectiveness ratio
INT$	international dollar, a hypothetical unit of currency which would buy an amount of goods and services in a cited country comparable to the amount that a U.S. dollar would buy in the United States
IPAQ	International Physical Activity Questionnaire
KMb	knowledge mobilisation
LMIC	low- and middle-income countries
MECC	Make Every Contact Count
MEF	minimum effective frequency
MET	metabolic equivalent
MM-SMC	mass media-based social marketing campaign
MVPA	moderate to vigorous intensity physical activity
NaSSDA	National Secondary Students' Diet and Activity survey
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NNPAS	National Nutrition and Physical Activity Survey

NSO	National Sporting Organisation
PA	physical activity
PAG	physical activity guideline
PAMS	Physical Activity Monitor (Canada)
PASS	physical activity surveillance system
PE	physical education
PIP QI	Practice Incentives Program Quality Improvement
PRAGMMATIC	Practical Guidance on Mass Media Techniques In Countries
PSM	Population Survey Monitor
QALY	Quality-Adjusted Life Year
RACGP	Royal Australian College of General Practitioners
SPANS	Schools Physical Activity and Nutrition surveys
STEPS	WHO STEPwise approach to Surveillance
SWB	subjective wellbeing
TARPs	Target Audience Rating Points
The Prevention Centre	The Australian Prevention Partnership Centre
TWH	Total Worker Health
TVC	television commercial
UK	United Kingdom
UN	United Nations
WHO	World Health Organization
WSA	whole-of-systems approach