7 Promoting physical activity

7.1 Background

There is compelling evidence that physical inactivity is responsible for a large proportion of coronary heart disease and type 2 diabetes (as well as some cancers, overweight and obesity, osteoporosis, falls in the elderly and mental health problems). Sedentary people have between 1.5 and two times higher risk of CVD compared with people who are active at moderate levels (such as brisk walking). Physical activity is also vital for the prevention and management of type 2 diabetes.

Current physical activity levels and trends

More than half of all Australian adults (57 per cent) are not achieving sufficient levels of physical activity for a health benefit, and almost 15 per cent are completely sedentary. There is also evidence that physical activity rates in Australia are declining (Armstrong et al. 2000).

Who is most inactive?

Women

- Those married
- Those with two or more children under school age
- Those aged 30 years or over

Middle aged and older adults

- Both men and women aged 40–50 years or older

People with a low socioeconomic status

- Particularly those with less than 12 years of education

Indigenous population

Populations with culturally and linguistically diverse backgrounds

Costs of physical inactivity

In Australia, physical inactivity is associated with high direct health costs conservatively estimated at $400 million per year. About 8000 preventable deaths each year are associated with physical inactivity, which ranks second only to tobacco as the largest contribution to the overall burden of disease (Bauman et al. 2002).

Increasing participation

The greatest public health gains are to be achieved by encouraging even small increases in physical activity among the least active Australians–that is, those who are sedentary and engaging in low levels of activity. Current recommendations state that individuals can gain health benefits from accumulating, on most days of the week, 30 minutes or more of moderate intensity physical activity in minimum bouts of around 10 minutes (Bauman et al. 2002).

Physical inactivity is a complex problem that requires action to address the individual, social, cultural, and environmental factors influencing people's participation in physical activity. Public health researchers and policy makers recognise there is no one strategy that works; rather, comprehensive, multistrategy solutions are needed to effectively tackle declining levels of physical activity.

Overview of evidence reviewed

This section provides an overview of the Australian and international evidence about the effectiveness of a range of interventions. Most of the evidence is available for individual focused interventions (such as information, education and behaviour change programs). These programs are successful in getting people more active but they reach only a small proportion of the population and do not produce change that is sustainable in the long term. Physical activity is more likely to be maintained with concurrent community-wide action to create supportive environments (such as policy to support walking and cycling in local communities).

Combining individual focused and community-wide interventions is the approach with the greatest potential for having an impact on the physical activity levels of the whole population. This brief review includes interventions shown to be effective and also strategies identified as being potentially effective. They include:

- health education and skill development
- health information/social marketing
- community-wide interventions
- community action (for social and environmental change)
- policy and environmental approaches (to the built environment and active transport).

7.2 Health education and skill development

Intervention description

Group based health education and skill development includes the provision of education through discrete planned sessions, with the aim of changing knowledge, attitudes, self-efficacy and individual capacity to be more physically active. Programs are generally tailored to the individual's readiness for change, specific interests and preferences. They can be supported by mail, telephone and/or directed media, and include components such as:

- goal setting and self monitoring
- the creation of social support for physical activity
- reinforcement through reward and positive self-talk
- structured problem solving
- the prevention of relapse (Kahn et al. 2002).

Population group/setting

The reviewed interventions were conducted in health care settings and community settings in the United States, Canada, the United Kingdom and Australia. Most involved more women than men, and most participants were middle-aged adults. Programs tailored for specific groups were particularly effective with women, older adults and minority community groups.

Effectiveness

Education and skill development programs delivered in group settings have been found to be effective in helping people increase and maintain physical activity in the short term. They are most effective when they are (1) based on an established theory of behaviour change and (2) include social support strategies (Salmon et al. 2000). Maintenance of these effects depends on social support strategies and supportive community environments.

Structured programs are resource intensive and rely on individual contact with programs and practitioners. On their own, they do not have a significant public health impact because their *reach* is limited to only the program participants.

The effectiveness of interventions focused on health care settings, group education and skill development, and social support is as follows.

Health care interventions usually involve individual counselling by a general practitioner, practice nurse and/or physiotherapist.

- On their own, they produce effects that are only modest and short term.
- They are most effective for sedentary people initiating behaviour change, older adults and high risk groups with risk factors such as obesity or impaired glucose tolerance (for example, minority groups).
- There is no evidence that more intensive counselling (up to 60 minutes) is any more effective than brief, opportunistic counselling (three to 10 minutes).
- Practitioners find these strategies difficult to incorporate into their everyday practice. For this reason, more knowledge is needed about implementation issues and critical success factors (Bauman et al. 2002; Egger et al. 1999a; Kahn et al. 2002, Smith et al. 2002).

Group education and skill development interventions typically involve a combination of education/skill development sessions and structured weekly exercise programs.

- They are effective in helping people gain the skills and confidence needed to start or resume regular physical activity.
- They are effective in increasing physical activity participation. Other benefits include weight loss (Kahn et al. 2002).
- There is little evidence, however, that these changes are sustained after the intervention. Maintenance of effects depends on social support strategies and supportive community environments.

- For older adults, increases in activity are more likely to be sustained after 12 months via 'lifestyle' programs focused on increasing accumulated activity through everyday life (housework, gardening, stair climbing) than via structured programs (Dunn et al. 1998).
- Lifestyle programs have been found to be more cost-effective after six months and after 24 months (costing US$17.15 compared with US$49.31 for structured programs) (Dunn et al. 1998).

Social support strategies focus on building, strengthening and maintaining social networks to provide support for behaviour change in physical activity. Interventions involve creating new social networks (such as a walking group) or building on existing networks (such as the workplace). Social support makes it easier for individuals to maintain their involvement in physical activity by increasing their motivation, providing practical assistance (such as shared childcare) and/or providing someone with whom to be active.

- Education and skill development interventions have been more effective when combined with social support strategies (a mean increase in physical activity of 44 per cent with social support, compared with 35.4 per cent without social support strategies) (Kahn et al. 2002).
- Social support strategies have been found to be particularly effective for women and minority community groups (Satterfield et al. 2003).
- Effectiveness is enhanced when community members are involved in developing their own ongoing local initiatives (such as walking groups, small community events and sports teams).

Implementation issues

Components of effective interventions include:

- setting up a buddy system (so companions can be active together and support the attainment of self-selected personal goals)
- contracting another person to complete specified levels of activity
- establishing walking groups or other groups to provide friendship and support
- phoning other group participants to monitor progress and encourage continued effort
- holding discussions focused on overcoming common barriers and negative attitudes.

References

Bauman et al. (2002); Dunn et al. (1998) in Salmon (2003); Egger et al. (2002); King et al. (1998); Salmon et al. (2000); Salmon (2003); Smith et al. (2002).

7.3 Health information/social marketing

Intervention description

Coordinated communication strategies are used to present information designed to motivate and encourage people to be more active. Such strategies use local newspapers, radio, television, outdoor promotions and print communications (such as leaflets and newsletters). Media strategies use advertising and/or free publicity through editorials and feature articles.

Population group/setting

The reviewed interventions used community-wide approaches to target strategies for minority groups/communities (Marcus et al. 1998; Kahn et al. 2002; National Public Health Partnership 2002; Salmon 2003).

Effectiveness

- Mass media strategies have been found to result in increased knowledge and motivation but have little sustained effect on physical activity participation unless they are combined with other community based strategies.
- Communication strategies have been effective in raising awareness about 'new' forms of exercise (such as cycling for transport) and new facilities (such as walking trails) (Merom et al. 2003; Socialdata Australia 2000).
- The use of signs promoting stair use has been effective but only in the short term. Maps of safe walking routes, walking trail information and public transport timetable links have all been associated with increased participation (National Public Health Partnership 2001a).

The *reach* of communication campaigns is extensive (with up to 60–70 per cent of the population being aware of the message), but they can also effectively target specific high risk groups.

Implementation issues

- Communication campaigns are more effective when complemented by supportive policy and environmental changes, as shown by TravelSmart WA (see 'Resources' below).
- High risk or disadvantaged groups can be reached effectively through targeted media information strategies developed and implemented by community members using their preferred media.
- Media strategies are useful for (1) promoting new services and facilities for physical activity (such as a walking trail) and (2) generating awareness about opportunities for advocacy and community action (such as participation in a council walking strategy) (Wen et al. 2002).
- Campaigns are costly and need to be carefully planned and targeted using social marketing strategies. Free publicity through local radio and newspapers can reduce costs.

- Advertising is expensive but offers greater control of content. Publicity through interviews and feature articles is free, but the content is difficult to control. It is important to develop a relationship with local journalists/media presenters, and provide well written media releases and information. A useful technique is to present the stories of local people.

References

Kahn et al. (2002) (review); Marcus et al. (1998); National Public Health Partnership (2001a) (active transport, review); Salmon (2003) (review).

7.4 Community-wide interventions

Intervention description

Community-wide approaches typically combine media campaigns with a range of community outreach activities, including means of strengthening social support, community events, community action groups pursuing local issues, and policy changes.

Population group/setting

Evidence is available for interventions conducted in small minority communities in the United States, Canada, Mexico, Fiji and New Zealand (Satterfield et al. 2003). Little evidence is available for Aboriginal communities in Australia (Rowley et al. 2000). Large scale interventions have been conducted in Australia to promote walking for women (Wen et al. 2002) and in Sweden for whole municipalities (Andersson et al. 2002).

Effectiveness

Multistrategy, community-wide campaigns have been found to be effective in increasing physical activity across whole communities (a median increase of 4.2 per cent in the percentage of people being active in the communities receiving the intervention) (Kahn et al. 2002). In Australia, the ‘Concord: a great place to be active’ campaign achieved a 6.5 per cent increase in participation for women across the whole community, which was sustained at two-year follow-up (Wen et al. 2002).

Reach and sustainability. While the effects appear small compared with those of targeted programs, these interventions reach large proportions of the population and thus result in a significant public health benefit. However, they require sufficient resources and well trained staff to ensure they are adequately implemented and evaluated. They have also been found to be effective in generating community action towards social and environmental change to support long term changes to physical activity (Andersson et al. 2003; Satterfield et al. 2003; Wen et al. 2002).

Implementation issues

- It is important to develop intersectoral partnerships among local government, health services, local businesses, key community leaders and community groups.
- Community-wide campaigns should include action to develop public policy.
- They should engage local politicians and decision makers.

- They should be incorporated into municipal structures.
- Local steering groups should include high level representatives from local government, to encourage commitment from local government and to ease local adoption of the program and its components.
- Communities and organisations should be allowed to assume program ownership as early as practicable and integrate activities into their ordinary agenda.
- Leadership (from the program and community) is vital for effectively initiating and maintaining activities (Andersson et al. 2002).

References

Andersson et al. (2002) (The Stockholm Diabetes Prevention Project–also see chapter 5); Kahn et al. (2002) (review); Rowley et al. 2000 (Aboriginal communities); Salmon (2003) (review); Satterfield et al. (2003) (review, minority and disadvantaged communities); Wen et al. 2002 (Australian study, women).

7.5 Community action (for social and environmental change)

Intervention description

Community action includes participation by community members in advocacy and action for social and environmental change. Examples include adopt-a-park groups, community building initiatives (such as the Streets Alive partnership program and TravelSmart WA), lobbying for offpeak rates at local facilities, community participation in developing local cycling strategies (such as Bicycle Victoria), audits of community walkability, and active transport in school communities (such as TravelSmart Victoria).

Population group/setting

The reviewed interventions targeted workplaces, schools and local communities.

Effectiveness

Community action/participation strategies to increase physical activity have not been widely evaluated. However, community action–such as lobbying by cycling advocacy groups in Victoria–has raised public awareness and contributed to policy and environmental change that has been associated with significant and sustained increases in participation in cycling. An example can be found in Melbourne: over the past five years in the Melbourne central business district, as cycling lanes and facilities have been implemented, cycling for transport has risen by 5 per cent per year. Cyclists' use of Swanston Street has increased by 360 per cent in the past 10 years (Bicycle Victoria 2003).

Community action to build social support for physical activity has also been a key component of effective interventions to promote walking in Australia (NSW Health 2003; Wen et al. 2002) and internationally (National Health and Medical Research Council 2001; Satterfield et al. 2003). Building the capacity of the community to participate in decision making and change has the potential to increase the *reach* and *sustainability* of physical

activity interventions (Kahn et al. 2002; Satterfield et al. 2003). Further evaluations are needed to clarify which strategies are most effective in engaging community members and to document critical success factors.

References

Kahn et al. (2002) (review); NSW Health (2003) (Australian study, mothers with young children); Satterfield et al. (2003) (minority communities); Wen et al. (2002) (women).

7.6 Policy and environmental approaches

Intervention description

Policy and environmental interventions focus less on individuals and more on the whole community and organisations (such as schools, workplaces and sporting clubs). These strategies have considerable potential to increase community-wide physical activity levels by reducing social and environmental barriers to physical activity, and by ensuring the provision of facilities and resources for people to be active. Policy approaches are needed to bring about changes in social and physical environments, and to advocate for local decision making to support physical activity.

Effectiveness

Although limited evidence is available regarding the effectiveness of specific policy components, the literature indicates that a range of policy and environmental and policy interventions have considerable potential to increase community-wide physical activity levels.

Reach and sustainability: Although the magnitude of change may seem modest compared with that produced by discrete programs and individual behaviour change interventions, the number of people reached and the sustainability of change have the potential for a significant long term public health benefit to result (Saelens et al. 2003).

Cost and feasibility. Major infrastructure changes are expensive and can be implemented gradually through planning and policy change. Responsibility can be shared across the intersecting interests of stakeholder groups, such as the health sector, the transport sector, decision makers in urban design, local government, environment groups and special user groups. Smaller scale changes can also be implemented with relatively low cost, such as strategies to address traffic and personal safety, walking trails, signage, access maps and enhanced public transport links.

Strategies for which there is good evidence of effectiveness include:

- signs encouraging stair use
- enhanced places for physical activity (cycling trails, women’s fitness centres, running and bicycling clubs)
- workplace interventions (showers and change facilities, lotteries and incentives, fitness testing, time release policies, the promotion of active commuting, advocacy for local support for walking/cycling).

- the building of new leisure centres, particularly in low socioeconomic areas (Kahn et al. 2002; Salmon 2003).

Implementation issues

Characteristics of effective environmental and policy interventions include:

- comprehensive long term strategies that focus on the social, physical, economic and policy environment
- the involvement of multiple stakeholders from many sectors beyond health, including urban planners, local government, the transport sector, environmental protection agencies, criminal justice organisations, community organisations and special interest groups
- the use of interdisciplinary teams and coalitions, including target groups and user groups.
- multiple level interventions that focus concurrently on the social, physical, economic and policy environments - these interventions are most likely to be effective and have the potential to yield more sustainable change
- the appropriate allocation of resources, given that considerable time is needed to establish policy and effect environmental change
- evaluation that includes indicators for changes in attitudes and knowledge, as well as for changes in physical activity behaviour
- the use of baseline, monitoring and long term follow-up measures.

Potential barriers to environmental and policy interventions include:

- building new facilities is time and resource intensive
- enhancing access to facilities requires careful planning, coordination and resources
- success is enhanced by community 'buy-in', which takes time, resources and political commitment
- inadequate resources and lack of trained staff may affect the quality of the intervention and its evaluation.

Case study: active transport

In Australia and overseas, there has been a marked increase in attention to policy and environmental approaches to facilitating active transport. When combined with social marketing strategies, changes to workplace and community environments have been associated with significant increases in the use of walking and cycling (National Public Health Partnership 2001). The National Public Health Partnership developed a portfolio of recommended interventions. The following areas were considered critical in increasing the use of active transport:

1. Social factors

Creating a milieu in which the use of active transport modes is a normal part of life

Creating positive images of people who walk, cycle or use other active transport modes

Reducing the attractiveness of using motor vehicles (costs, taxes) compared with alternative modes (including public transport)

Raising awareness of the effects that transport policy may have on social exclusion and inequalities in health

2. Urban planning

Designing communities and buildings that encourage walking and active transport; trying to have workplaces near to home

Minimising car dependency by developing mixed land use in neighbourhoods (residential, shops, employment, open space)

Promoting medium and high density housing

Clustering public facilities (such as shops) that can provide a focus for walking

3. Transport related issues

Making active transport easier

Planning street design, walking and cycling paths and facilities

Addressing safety issues (personal safety and traffic safety such as calming devices)

Providing transport facilities that are attractive, convenient and accessible

Providing easily understood information related to the use of active transport modes (timetables, local access maps of walking cycling and public transport routes, facilities and local destinations)

4. An intersectoral approach

Combining land use management and control with transport practices (to ensure effective policies are put in place)

Engaging key stakeholders from other sectors in ways that address their needs and priorities (for example, the potential to reduce greenhouse gases for the environment sector).

Adapted from National Public Health Partnership (2001a).

Implementation issues

A range of sectors has an interest in issues associated with increasing the use of active transport (walking and cycling). In addition to the health benefits of increasing physical activity participation, these issues include generating more effective use of public transport, reducing pollution, preserving the environment and building more cohesive, safe and socially connected communities. This review indicates that the way forward involves building strategic intersectoral partnerships among sectors (such as local government, urban planning and transport, environment, education and social welfare) and with a range of organisations, employers, schools and community groups.

References

Bauman et al. (2002) (review); Humpel et al. (2003) (review); Kahn et al. (2002) (review); National Public Health Partnership (2001a) (review); Salmon (2003) (review); Saelens et al. (2003) (review).

7.7 Specific population groups

Interventions have been evaluated for specific population groups (including women, older adults and Indigenous/culturally and linguistically diverse communities), but few have been in an Australian context. Most of the interventions used varying combinations of the strategies described in this review, including education and individual behaviour change skills, social support, social marketing, community participation and local capacity building.

Women

In Australia, multistrategy, community-wide programs such as 'Concorde: a great place to be active' have achieved sustained changes in women's participation (Wen et al. 2002). The recruitment of young mothers into community physical activity programs at child health centres has potential for high reach and effectiveness, but the sustainability of the effects depends on social support strategies and supportive environments in local communities (Lewis 2002; NSW Health 2003).

Older adults

Reviews of interventions targeting older adults indicate that home based programs with telephone support have been as effective as group based interventions in the short term. Long term sustainability has been better in group programs that are based at community centres or health care settings and that include self-monitoring (King et al. 1998).

Socially disadvantaged groups

The international literature indicates that interventions for low income, Indigenous and culturally and linguistically diverse communities are most effective when (1) they are tailored to the needs, interest and cultural practices of the group, (2) they involve members of the group in planning, implementation (such as peer leaders) and evaluation (community identified priority outcomes) and (3) community ownership of the program occurs as early as possible (Banks-Wallace and Conn 2002; Salmon 2003; Satterfield et al. 2003).

References

Banks-Wallace and Conn (2002) (review); Satterfield et al. (2003) (review).

7.8 Future directions for promoting physical activity

The most effective interventions are those that combine multiple strategies at multiple levels, and that involve a range of key stakeholders and the community. Consequently, the way forward involves using capacity building strategies for developing leadership, building partnerships and facilitating cooperation. This approach depends on a genuine commitment of time and resources, and participation by governments, organisations and members of the community.

7.9 Resources

Section 7.2:

- Women's Participation Program (Sport and Recreation Victoria)–training course available for peer leaders, support materials, resources (http://www.womensport.com.au)
- Walking groups and the 'Walk and talk' program (VICFIT Physical Activity Infoline 1800 638 594)

Section 7.3:

- Resources and television advertisements from the West Australian Premier's Physical Activity Task Force (http://www.patf.dpc.wa.gov.au/)
- http://www.travelsmart.gov.au
- 'Active for life' campaign in Victoria (http://www.activeforlife.vic.gov.au)
- http://www.active australia.org

Section 7.5:

- Bicycle Victoria (2003) (advocacy for cycling support strategies)
- Currie and Develin (1999) (walking groups for mothers)
- TravelSmart Victoria (2003) (community action around active transport)
- *Creating healthy and more sustainable travel options* (http://www.travelsmart.gov.au/toolkits.html)

Section 7.6:

- *Promoting active transport: a portfolio on interventions* (National Public Health Partnership 2002).
- *Supportive environments for physical activity* (http://www.heartfoundation.com.au/sepa/) –a guide for working in partnership with local government and communities
- The US Task Force on Community Preventive Services review of interventions (expected to be available in 2004), covering (1) transport policy and infrastructure change to promote nonmotorised transport and (2) urban planning approaches, including zoning, land use, street design and cluster developments (http://www.thecommunityguide.org)

Section 7.7:

- Womensport and Recreation Victoria (http://www.womensport.com.au)–resources, guidelines, training courses, funding opportunities, contact organisations
- *Proactive mums: promoting physical activity through childcare centres* (NSW Health 2003)
- Australian Council on the Ageing (http://www.cotavic.org.au/llls/llls.html#top)
- VICFIT 'Active at any age' and 'Walk and talk' programs (http://www.vicfit.com.au)
- Women's Participation Program (http://www,womensport.com.au)–peer leader training for community physical activity programs for culturally and linguistically diverse women, resources and support materials.
- Centre for Multicultural and Youth Issues (http://www.cmyi.net.au).

Evaluation tools

- Physical Activity Monitoring and Evaluation Toolkit by the Centre for Physical Activity and Nutrition Research, Deakin University (http://www.hbs.deakin.edu.au/HealthSci/Research/PAN_Research/PAN_ResearchUnit/Behavioural_Epidemiology.asp) (select: Monitoring and assessing physical activity behaviour)–practical evaluation tools (validated survey questionnaires) and other useful practical information. The questionnaires include:
  - the Active Australia Survey (a brief, easily implemented survey that measures total physical activity)
  - the International Physical Activity Questionnaire (a longer survey that measures leisure time, occupational and incidental physical activity, including transport related physical activity; excellent for policy interventions)
  - a survey of physical activity for specific populations (such as older adults and children; designed for the Australian context)
  - the Environmental Supports for Physical Activity Questionnaire (a US survey that investigates environmental characteristic, including social aspects of neighbourhoods and perceptions of community safety)
  - the Neighborhood Environments Walkability Survey (a US survey that is simple and easily implemented).
- The US Centres for Disease Control and Prevention *Resource guide for nutrition and physical activity interventions to prevent obesity and other chronic diseases* (http://www.cdc.gov/nccdphp/dnpa/physical/index.htm)–includes evaluation tools.

Case studies, best practice programs

- The US Centres for Disease Control and Prevention *Resource guide for nutrition and physical activity interventions to prevent obesity and other chronic diseases* (http://www.cdc.gov/nccdphp/dnpa/physical/index.htm)–includes evaluation tools, economic impacts information, resources for practitioners, case studies of programs, community and environmental approaches.
- VicHealth case studies and funding opportunities (http://www.vichealth.vic.gov.au)
- VICFIT (http://wwww.vicfit.com.au)
- Irish Heart Foundation's *Sli na Slainte* (http://www.irishheart.ie/slinaslainte/default.htm) –a multistrategy national program to promote walking in local communities and workplaces. Website includes an overview, staff and community leader training, an implementation guide, community walking trail development, resources, events and publications.
- *Supportive environments for physical activity. A guide for working in partnership with local government and communities* (http://www.heartfoundation.com.au/sepa/)–also information about funding opportunities.

- Cycle-Friendly Workplace booklet - helps businesses recognise the benefits of commuter cycling, create a cycle-friendly culture, and provide incentives for cycling to work. The guide includes case studies of cycle-friendly work places (http://www.bv.com.au) (Keyword: Cycle-friendly workplace).
- National cycling strategy (http://www.abc.dotars.gov.au)–useful for lobbying local government.
- TravelSmart (http://www.travelsmart.gov.au for Australia), (http://www.travelsmart.vic.gov.au for Victoria), (http://www.travelsmart.wa.gov.au for Western Australia)–excellent policy and practical case studies about increasing the use of walking and cycling for transport; information about media campaigns and community based initiatives; new sections being completed on workplaces, hospitals, schools and special events; great Victorian case studies.
- *Go for green. Environmentally friendly transport options in the US* (http://www.goforgreen.ca/home)
- Australian Council on the Ageing (http://www.cotavic.org.au/llls/llls.html#top)–information on coordinating a strength training program for older adults.
- Womensport and Recreation Victoria (http://www.womensport.com.au)–extensive collection of resources, guidelines, training courses, workshops, funding opportunities and contact organisations.