Physical activity 1: Overview of the CDC Systematic Review: The effectiveness of interventions to increase physical activity

Bibliographic information	Review strategy	Summary of evidence of effectiveness	Additional information
Title: The effectiveness of interventions to increase physical activity **Authors:** Kahn EB, Ramsey LT, Brownson RC, Heath GW, Howze EH, Powell KE, Stone EJ, Rajab MW, Corso P, and the Task Force on Community Preventive Services **Date:** 2002 **Type of review**: Systematic **Number of studies included**: 94 studies **Publication details**: American Journal Preventive Medicine, 2002, 22(4S), 73-107	**Review question**: Which interventions are effective in increasing participation in physical activity? **Intervention(s):** Three main types. Information-based, behavioural and social, and environmental and policy interventions **Inclusion criteria (relevance):** Studies published between 1980-2000. English language, countries with a market economy. Interventions to increase or maintain PA using informational approaches, social and behavioural approaches and environmental and policy interventions. **Inclusion criteria (quality):** RCTs and non-RCTs with concurrent control group, baseline and post-intervention measures of outcomes. **Exclusion:** Limitations on design or execution. **Review strategy:** 7 electronic databases 1980-2000, bibliographies of existing reviews, consultation with experts	**Outcomes measured**: Physical activity , energy expenditure, aerobic capacity **Effect size**: Various **Effect sustainability**: Not documented **Other effects**: No information recorded **Conclusion**: <u>Strong consistent evidence</u> Community-wide education, community social support, individually adapted health behaviour change programs, and enhanced access to places for physical activity. <u>Sufficient evidence</u> Point of decision prompt signs <u>Limited/insufficient evidence</u> Mass media campaigns, college-based health education	**Disadvantaged groups**: see individual interventions **Economic evaluation**: N/A **Criteria for evaluating evidence**: Strong, sufficient or limited evidence of effectiveness **Resources and Links**: US Department of Human Services (2001) 'Increasing Physical Activity: A Report on the Recommendations of the Task Force on Community Preventive Services', Oct.2001, Vol. 50, No. RR-18. This report and all intervention studies available at the website: < www.thecommunityguide.org >

Physical activity 2: Health Information/Social marketing - Point of decision prompts

Bibliographic information	Review strategy	Summary of evidence of effectiveness	Additional information
Title: The effectiveness of interventions to increase physical activity **Authors:** Kahn EB, Ramsey LT, Brownson RC, Heath GW, Howze EH, Powell KE, Stone EJ, Rajab MW, Corso P, and the Task Force on Community Preventive Services **Date:** 2002 **Type of review**: Systematic **Number of studies included**: 6 studies, time series designs. **Publication details**: American Journal Preventive Medicine, 2002, 22(4S), 77	**Review question**: Are point of decision prompt signs effective in increasing or maintaining levels of physical activity in populations? **Intervention(s):** Motivational signs placed close to elevators and escalators encouraging the use of nearby stairs for health benefit or weight loss. Single component intervention focused on PA only. **Inclusion criteria (relevance):** Studies published between 1980-2000. English language, countries with a market economy. Interventions to increase or maintain PA using informational approaches: point-of-decision prompts (n=6), community-wide campaigns (n=10) and mass media campaigns (n=3) **Inclusion criteria (quality):** RCTs and non-RCTs with concurrent control group, baseline and post-intervention measures of outcomes. **Exclusion:** Limitations on design or execution. **Review strategy:** 7 electronic databases 1980-2000, bibliographies of existing reviews, consultation with experts	**Outcomes measured**: Physical activity (increase in percentage of people using the stairs) **Effect size**: Median increase 53.9%. Range: 5.5 - 128% increase. **Effect sustainability**: No information recorded **Applicability**: ▪ Context - Studies in US (n=4), UK (n=1), Scotland (n=1). Shopping malls, train and bus stations, university library. ▪ Populations - effective in both men and women. Greater effect amongst obese people when sign links stair use to weight loss. Mixed evidence in relation to blacks: a negative effect with the generic message, but a positive effect when signs tailored for the black population. ▪ Program - signs posted for 2-3 weeks eg. "Stay healthy, save time, use the stairs" and "Your heart needs exercise, here's your chance" ▪ Comments on transferability (see below) **Other effects**: No information recorded **Conclusion**: Recommended strategy. Sufficient evidence. Effective in a range of settings with a range of population sub-groups. Tailoring the prompts to specify the benefits (eg weight loss) or customising signs for specific populations (eg. minority groups) may increase effectiveness.	**Disadvantaged groups**: See Applicability **Criteria for evaluating evidence**: Strong, sufficient or limited evidence of effectiveness **Research gaps identified**: Sustainability of effects? Effect of varying the message, format, size, positioning of signs? Effect variations by target groups and settings? **Comments**: Implementation Factors: Stairways are often poorly lit, maintained, secured and therefore appear unsafe. Stairwells are often locked, preventing access. Need organisational support for change. **Resources and Links**: US Department of Human Services (2001) 'Increasing Physical Activity: A Report on the Recommendations of the Task Force on Community Preventive Services', Oct.2001, Vol. 50, No. RR-18. This report and all intervention studies available at the website: < www.thecommunityguide.org >

Physical activity 3: Information/Social marketing - Community-wide campaigns

Bibliographic information	Review strategy	Summary of evidence of effectiveness	Additional information
Title: The effectiveness of interventions to increase physical activity **Authors:** Kahn EB, Ramsey LT, Brownson RC, Heath GW, Howze EH, Powell KE, Stone EJ, Rajab MW, Corso P, and the Task Force on Community Preventive Services **Date:** 2002 **Type of review**: Systematic **Number of studies included**: 10 **Publication details**: American Journal Preventive Medicine, 2002, 22(4S), 77-9	**Review question**: Are community-wide campaigns effective in increasing or maintaining levels of physical activity in populations? **Intervention(s):** Multi-component interventions. 6 multi-risk factor interventions for CVD prevention focused on diet and PA. Duration ranged from 6weeks to several years. All included media campaigns (print and electronic media, paid advertising, publicity/press releases, features) in combination with a range of other strategies (such as community participation through self help groups, education and counselling at worksites, schools and community groups, community events, and advocacy for environmental change eg. new walking trails). **Inclusion criteria (relevance):** Studies published between 1980-2000. English language, countries with a market economy. Interventions to increase or maintain PA using community-wide campaigns. **Inclusion criteria (quality):** RCTs and non-RCTs with concurrent control group, baseline and post-intervention measures of outcomes. **Exclusion:** Limitations on design or execution. **Review strategy:** 7 electronic databases 1980-2000, bibliographies of existing	**Outcomes measured**: Physical activity (percentage of people active, time spent in PA), energy expenditure (EE) **Effect size**: Median increase in PA: 4.2%. Range: 2.9 - 9.4% Median increase in EE: 16.3%. Range: 7.6 - 21.4% **Effect sustainability**: No information recorded in this review **Applicability**: ▪ Context - Mostly US (n=5), one each from Sweden, Denmark, Scotland, Wales, Australia[1]. Rural, suburban, rural areas and all socio-economic groups. Includes 4 studies with minority groups (blacks, Latinos). ▪ Populations – Communication strategies were directed to large and undifferentiated audiences. ▪ Program – Most interventions included a range of strategies, evaluated as a combined package as it was impossible to distinguish between the relative contributions of each component. **Other effects**: Weight loss: net decrease 0.6% Increased PA knowledge: 20% Increase in intention to exercise: 5 studies. Social networks and social capital (see implementation)	**Disadvantaged groups**: No information recorded in this review **Criteria for evaluating evidence**: Strong, sufficient or limited evidence of effectiveness **Research gaps identified**: Components of community-wide campaigns which are most effective? The most effective delivery settings and channels? Cost-benefit analysis of developing coalitions for delivery of interventions? **Implementation Factors:** Community participation in campaign activities has the potential to build social capital in communities by developing a greater sense of cohesion and collective self-efficacy. Social networks may be strengthened through the intervention and as people become more involved in local government and civic organisations. Effective interventions require careful planning, co-ordination, well-trained staff and sufficient resources to ensure adequate exposure to messages and activities and to ensure that intervention is properly implemented and evaluated. Enhanced by community participation but this takes considerable time and effort to achieve. Limitations of communication strategies directed at large and undifferentiated audiences. Interventions could use social

[1] See Owen et al 1987 (see CDC ref list)

	reviews, consultation with experts	**Conclusion**: Recommended strategy. Strong evidence of effectiveness. Community-wide campaigns are likely to be effective across diverse settings and population groups, provided that appropriate care is taken to adapt the intervention to the target populations.	marketing strategies to tailor messages for population sub-groups. **Resources and Links:** Website: www.thecommunityguide.org

Physical activity 4: Information/Social marketing - Mass media campaigns

Bibliographic information	Review strategy	Summary of evidence of effectiveness	Additional information
Title: The effectiveness of interventions to increase physical activity **Authors:** Kahn EB, Ramsey LT, Brownson RC, Heath GW, Howze EH, Powell KE, Stone EJ, Rajab MW, Corso P, and the Task Force on Community Preventive Services **Date:** 2002 **Type of review**: Systematic **Number of studies included**: 3 studies. One non-randomised RCT, one baseline and post-intervention study, one time series study. **Publication details**: American Journal Preventive Medicine, 2002, 22(4S), 79	**Review question**: Are mass media campaigns effective in increasing or maintaining levels of physical activity in populations? **Intervention(s):** Paid advertising, publicity and donated promotions. Channels included print, electronic and outdoor media. Intervention did not involve other support activities in community. **Inclusion criteria (relevance):** Studies published between 1980-2000. English language, countries with a market economy. Interventions to increase or maintain PA using mass media campaigns. **Inclusion criteria (quality):** RCTs and non-RCTs with concurrent control group, baseline and post-intervention measures of outcomes. **Exclusion:** Limitations on design or execution. **Review strategy:** 7 electronic databases 1980-2000, bibliographies of existing reviews, consultation with experts	**Outcomes measured**: Physical activity (increase in percentage of people engaged in PA, percentage of population categorised as sedentary). Change in energy expenditure (EE). **Effect size**: Modest increase in PA. Most effective in getting sedentary people to initiate some form of activity. Inadequate evidence for effectiveness in increasing numbers of people reaching recommended levels of PA. **Effect sustainability**: No information recorded **Applicability**: ▪ Context: Australia and US. **Other effects**: Significant increases in knowledge and beliefs (2 studies). **Conclusion**: Insufficient evidence regarding the effectiveness of mass media campaigns, when used alone, due to small number of studies and limitations in designs. Mass media may be an important component of multi-strategy interventions by changing awareness of opportunities for PA, benefits of PA, helping to build support for environmental and policy changes to support PA.	**Disadvantaged groups**: Not reported **Economic evaluation**: Not reported **Criteria for evaluating evidence**: Strong, sufficient or limited evidence of effectiveness **Resources and Links**: US Department of Human Services (2001) 'Increasing Physical Activity: A Report on the Recommendations of the Task Force on Community Preventive Services', Oct.2001, Vol. 50, No. RR-18. This report and all intervention studies available at the website: < www.thecommunityguide.org >

Physical activity 5: Health education and skill development - individually adapted behaviour change in group settings

Bibliographic information	Review strategy	Summary of evidence of effectiveness	Additional information
Title: The effectiveness of interventions to increase physical activity **Authors:** Kahn EB, Ramsey LT, Brownson RC, Heath GW, Howze EH, Powell KE, Stone EJ, Rajab MW, Corso P, and the Task Force on Community Preventive Services **Date:** 2002 **Type of review**: Systematic **Number of studies included**: 18 **Publication details**: American Journal Preventive Medicine, 2002, 22(4S), 85-7	**Review question**: Are individually-adapted health behaviour change programs effective in increasing or maintaining levels of physical activity in populations? **Intervention(s):** Individually-adapted behaviour-change programs tailored to the individual's readiness for change, specific interests and preferences. Based on various behaviour change theories. Delivered in group settings or by mail, telephone or directed media. All programs included: • Goal-setting and self monitoring • Building social support for PA • Reinforcement through reward and positive self-talk • Structured problem-solving • Prevention of relapse. **Inclusion criteria (relevance):** Studies published between 1980-2000. English language, countries with a market economy. Interventions to increase or maintain PA using community-wide campaigns. **Inclusion criteria (quality):** RCTs and non-RCTs with concurrent control group, baseline and post-intervention measures of outcomes. **Exclusion:** Limitations on design or execution. **Review strategy:** 7 electronic databases 1980-2000, bibliographies of existing	**Outcomes measured**: Physical activity (percentage of people active, time spent in PA), energy expenditure (EE), aerobic capacity (VO2 max) **Effect size**: Increases in PA: Med.= 35.4 %.(Range: 16.7-83.3 %) EE: Med. = 64.3%. (Range: 31-85.5 %) VO2 max: Med = 6.3% (Range: 5.1-9.8%) Increases in other measures: number of exercise sessions, people starting exercise programs, frequency of PA. **Effect sustainability**: No information recorded in this review **Applicability**: ▪ Context - Mostly US (n=17), one from Australia[2]. Community settings (n=14), worksites (n=2), schools, universities, and a telecommunications company. ▪ Populations – Volunteer samples limit generalisability to the whole population. Most studies focused on middle-aged adults, four on those aged over 50 years. ▪ Program – Most interventions included a range of strategies and were evaluated as a combined package because it was impossible to distinguish between the relative contributions of each component.	**Disadvantaged groups**: No information recorded in this review **Economic evaluation**: One 2-year study (US). Lifestyle intervention: behaviour change training. Structured exercise program: centre-based exercise program, 20-60 mins per session, 50-85%max aerobic power. Cost-effectiveness ratio $0.05- $3.94 (lifestyle) and $0.07-$5.39 (structured). **Criteria for evaluating evidence**: Strong, sufficient or limited evidence of effectiveness **Implementation Factors:** Effective interventions require careful planning, co-ordination, well-trained staff and sufficient resources to ensure adequate exposure to messages and activities and to ensure that intervention is properly implemented and evaluated. **Resources and Links:** Website: www.thecommunityguide.org

[2] Owen et al 1987 (see CDC refs)*

	reviews, consultation with experts	**Other effects**: Weight loss (n=6) : median -3.9% Increased strength (n=7): median 7.8% Increased flexibility in 2/2 studies **Conclusion**: Recommended strategy. There is strong evidence that individually-adapted behaviour change programs are effective in increasing levels of PA.	

Physical activity 6: Community participation - social support interventions in community settings

Bibliographic information	Review strategy	Summary of evidence of effectiveness	Additional information
Title: The effectiveness of interventions to increase physical activity **Authors:** Kahn EB, Ramsey LT, Brownson RC, Heath GW, Howze EH, Powell KE, Stone EJ, Rajab MW, Corso P, and the Task Force on Community Preventive Services **Date:** 2002 **Type of review**: Systematic **Number of studies included**: 9 studies **Publication details**: American Journal Preventive Medicine, 2002, 22(4S), 84-5	**Review question**: Are social support interventions in community settings effective in increasing or maintaining levels of physical activity in populations? **Intervention(s):** Focus on building, strengthening and maintaining social networks that provide supportive relationships for behaviour change around PA. This involves creating new social networks or building on existing networks in a social setting outside the family, such as the workplace. Components include: setting up a buddy system, contracting with another person to complete specified levels of PA, establishing walking groups or other groups to provide friendship and support. Voluntary groups provide companionship for PA and support to attain self-selected personal goals. Phone calls from other participants to monitor progress and encourage continuation. Discussion groups: problem-solving around barriers and negative attitudes. **Inclusion criteria (relevance):** Studies published between 1980-2000. English language, countries with a market economy. Interventions to increase or maintain PA using community-wide campaigns. **Inclusion criteria (quality):** RCTs and non-RCTs with concurrent control group, baseline and post-intervention measures of outcomes. **Exclusion:**	**Outcomes** Physical activity (Time spent in PA, Frequency), Aerobic capacity (VO2max) **Effect size**: Increases in <u>PA time spent :</u> Median=44.4%.(Range: 19.9-45.6%) <u>PA frequency:</u> Median =19.6% (Range: 14.6-57.6%) <u>VO2max:</u> Median 4.7%.(Range: 3.3-6.1%) **Effect sustainability**: No information recorded in this review **Applicability**: ▪ Context - US (7studies), Canada (1) and Australia (1). Community centres, churches, worksite and university. ▪ Populations - Men and women, mostly middle aged, sedentary people (3 studies) with a range of initial activity levels ▪ Program – Both highly structured and less formal support were equally effective in getting people to be more active. ▪ Comments on transferability: see below **Other effects**: Decrease adiposity Med.=7.3%(Range 6.8-8.1%) 4 studies showed increased confidence about exercise, knowledge and social support. **Conclusion**: Recommended strategy. Strong evidence	**Disadvantaged groups**: No information recorded in this review **Economic evaluation**: No information recorded in this review **Criteria for evaluating evidence**: Strong, sufficient or limited evidence of effectiveness **Research gaps identified**: Which types of support and medium works for whom? Do frequency, intensity and structure of the support make a difference? What are the variations by gender? **Resources and Links:** Website: www.thecommunityguide.org

	Limitations on design or execution. **Review strategy:** 7 electronic databases 1980-2000, bibliographies of existing reviews, consultation with experts	of effectiveness. Non-family based social support interventions are likely to be effective across diverse settings and population groups, provided that appropriate care is taken to adapt the intervention to the target populations.	

Physical activity 7: Supportive environments - enhanced access to places for PA

Bibliographic information	Review strategy	Summary of evidence of effectiveness	Additional information
Title: The effectiveness of interventions to increase physical activity **Authors:** Kahn EB, Ramsey LT, Brownson RC, Heath GW, Howze EH, Powell KE, Stone EJ, Rajab MW, Corso P, and the Task Force on Community Preventive Services **Date:** 2002 **Type of review**: Systematic **Number of studies included**: 9 studies **Publication details**: American Journal Preventive Medicine, 2002, 22(4S), 87-89	**Review question**: Is the creation of enhanced access to places for PA combined with informational outreach activities effective in increasing or maintaining levels of physical activity in populations? **Intervention(s):** Multi-component interventions. Involve worksites, coalitions, agencies and communities. Increased access to places for PA is created by building new trails or facilities (or by enhancing exiting ones) or by reducing barriers to such places (eg. reducing fees, providing time for use). Some included training in equipment use and incentives (risk factor screening, counselling, health education) Point of decision prompt signs are evaluated separately under Physical Activity 2 above. Two other interventions with review pending: 1. Transport policy and infrastructure change to promote non-motorised transport. 2. Urban planning approaches, including zoning, land use, street design and cluster developments. **Inclusion criteria (relevance):** Studies published between 1980-2000. English language, countries with a market economy. Interventions to increase or maintain PA using community-wide campaigns. **Inclusion criteria (quality):** RCTs and non-RCTs with concurrent	**Outcomes** Physical activity (% of people active on 3 or more days per week, Self reported PA) Energy expenditure (EE), Aerobic capacity (VO2max) **Effect size**: Increases in PA (% of people active) Med.=25.6% (Range: 10.6-50.2%) Self reported PA: Med.=13.7% (Range: -1.8-69.6%) EE: Med. 8.2% (Range: 5.1-6.4%) VO2max: Med. 5.1% (Range 2.8-9.6%) **Effect sustainability**: No information recorded in this review **Applicability**: ▪ Context - All US studies. Canada (1) and Australia (1). Worksites, universities, federal agencies. ▪ Populations - Low income (2 studies), men only (1), men and women separately (2), blacks (1) ▪ Program –Components evaluated together because it was impossible to separate the individual components. Many interventions addressed CVD risk factors including diet and smoking. ▪ Comments on transferability: Likely to be effective across diverse settings and population groups, provided that appropriate care is taken to adapt the intervention to the target populations. **Other effects**: Weight decrease (6 studies), weight gain (1). Various improvements in strength,	**Disadvantaged groups**: No information recorded in this review **Economic evaluation**: Cost benefit analysis of 2 worksite interventions showed that benefits in dollar terms were over 3 times the costs. Benefits included decreased health care costs, absenteeism, deaths, productivity. Costs included personnel, operating expenses, capital equipment, materials, time away from job not included. **Criteria for evaluating evidence**: Strong, sufficient or limited evidence of effectiveness **Research gaps identified**: What community characteristics are optimal for implementation? Effect according to type of access or SES group? How can political and societal support for these interventions be galvanised? Differential effects for both sedentary and already active people? Are other support interventions necessary? Which neighbourhood features are most crucial in influencing PA patterns? Does proximity of parks, trails increase frequency of use? **Implementation Factors:** Building new facilities is time and resource intensive. Enhancing access to facilities requires careful planning, co-ordination, and resources (see economic evaluation). Success enhanced by community 'buy-in' which takes time and effort. Inadequate resources and lack of trained staff may affect quality of intervention and evaluation.

	control group, baseline and post-intervention measures of outcomes. **Exclusion:** Limitations on design or execution. **Review strategy:** 7 electronic databases 1980-2000, bibliographies of existing reviews, consultation with experts	flexibility, perceived energy and confidence about being active. **Conclusion**: Recommended strategy. Strong evidence of effectiveness in increasing population levels of physical activity.	**Resources and Links:** Website: www.thecommunityguide.org

Physical activity 8: Policy and environments: Active Transport

Bibliographic information	Review strategy	Summary of evidence of effectiveness	Additional information
Title: Promoting Active Transport: An intervention portfolio to increase physical activity as a means of transport **Authors:** National Public Health Partnership **Date:** 2001 **Type of review**: Narrative review **Number of studies included**: 7 studies **Publication details**: National Public Health Partnership Secretariat, Melbourne, Australia	**Review question**: What interventions are effective in increasing levels of physical activity as a means of transport? **Intervention(s):** Interventions were conducted in workplaces and the general community and included various combinations of individualised telephone marketing; information and access maps, travel diaries; workplace facilities and incentives for active transport; green transport promotion campaigns and events (eg. ride-to-work days). Duration 2-3 weeks - 3years. 3 yr intervention for TravelSmart (WA). **Inclusion criteria (relevance):** Interventions to increase PA using active transport. **Inclusion criteria (quality):** Controlled interventions, quasi-experimental designs and observational studies of trend data for walking and cycling. **Review strategy:** Electronic databases, grey literature, consultation with experts	**Outcomes** Range of increases in active transport Changes in awareness/attitudes **Effect size**: Various effect sizes. Notable findings for TravelSmart (WA). At 2yr follow-up: Walking trips (16%), decreased single person car trips (10%), and increased public transport use (27%) **Effect sustainability**: Up to 2 years. TravelSmart evaluation still underway. **Applicability**: ▪ Context - 4 Australian, 3 international ▪ Populations - whole community ▪ Program - Providing information about and opportunities to use alternative forms of transport; providing workplace facilities (showers, bicycle parking); promotional events (such as ride-to-work events); encouraging policy changes within workplaces (such as the use of 'pool' bicycles, interest-free loans to purchase bicycles); and providing information related to alternative modes of transport, health and the environment. **Conclusion**: Limited information about determinants and lack of empirical evidence about effectiveness has restricted the identification of evidence recommendations for interventions. Lack of evaluation of interventions should not be a barrier to inclusion in a lost of potential interventions.	**Disadvantaged groups**: No effects documented. Potential to reduce social inequalities and social isolation through enhanced non-motorised transport. **Economic evaluation**: Not documented **Criteria for evaluating evidence**: No documented **Research gaps identified**: Collection of monitoring data. Link research and existing data sets from various sectors. Systems to assist evaluation and monitoring. **Implementation Factors:** Key program factors for successful interventions: comprehensive long-term strategies to change transport modes across all settings; policy and environmental changes complement individual behaviour change strategies (such as education, information, mass media, behaviour change programs) **Resources and Links:** Website: www.nphp.gov.au

Physical activity 9: Policy and environments: Active Transport

Title: Environmental correlates of walking and cycling: findings from the transportation, urban design and planning literatures **Authors:** Saelens B., Sallis J., Frank L. **Date:** 2003 **Type of review**: Systematic **Number of studies included**: 14 studies 10 comparison studies of correlations between neighbourhood environment characteristic and walking/cycling. 4 correlational studies. **Publication details**: Annals of Behavioural Medicine 2003, 25 (2), pp.80-91.	**Review question**: What are the environmental factors which correlate with walking and cycling for transport? **Intervention(s):** Compared walking and cycling in high-walkable and low-walkable neighbourhoods **Inclusion criteria (relevance):** Neighbourhood comparison and correlational studies **Inclusion criteria (quality):** Individuals' actual walking and cycling rates **Exclusion:** Individuals' actual walking and cycling rates not included **Review strategy:** Review of Transport database.	**Outcomes** Number of walking trips, percentage of walking for work and shopping. **Effect size**: Various effect sizes. High walkable neighbourhoods twice as many walking trips as in low-walkable. Range: -0.1 - 5.7 trips **Effect sustainability**: Effects expected to be maintained in the long term as environmental factors are relatively permanent and stable. **Applicability**: ▪ Context - All US studies ▪ Populations - range of socio-demographic variables **Conclusion**: Findings reflect differences in PA across the entire population of those communities. Thus the potential reach of these approaches is very high. Changes to environments can be expected to be relatively permanent. Effect sizes of environmental change on walking and cycling may be modest but, when the likely pervasive reach and sustainability is considered, they may compare very favourably to the population effects of more individual-focused approaches.	**Disadvantaged groups**: No effects documented. Potential to reduce social inequalities and social isolation through enhanced non-motorised transport. **Economic evaluation**: Not documented **Criteria for evaluating evidence**: No documented **Research gaps identified**: Improved understanding of environmental correlates

Physical activity 10: Environmental and policy approaches

Title: Environmental and Policy interventions to promote physical activity **Authors:** Sallis J., Bauman A., Pratt M. **Date:** 1998 **Type of review**: Narrative **Number of studies included**: 7 studies **Publication details**: American Journal of Preventive Medicine 1998, vol.15, no.4,pp.379-397	**Review question**: Are environmental and policy interventions effective in increasing or maintaining physical activity? **Intervention(s):** Signs encouraging stair use; whole community interventions (bike trials, opening a women's fitness centre, running and bicycling clubs); workplace interventions (showers and change facilities, lotteries and incentives, fitness testing, time release policies, promotion of active commuting, advocacy for local support for walking/cycling); and building new leisure centres. **Inclusion criteria (relevance):** RCTs, quasi-experimental studies Cross-sectional data **Inclusion criteria (quality):** Contains evaluation of the interventions **Review strategy:** Electronic databases	**Outcomes** Stair use, fitness, active commuting, physical activity **Effect size**: Increases in: Stair use: doubled in men and women Fitness: (community intervention) size not documented Active commuting = 7% (Vuori et al) PA: Range of increases. **Effect sustainability**: Effects expected to be maintained in the long term as environmental factors are relatively permanent and stable. **Applicability**: ▪ Context - US, UK and one Finland study ▪ Populations - provision of new leisure centres in low-income areas reduced the usual social inequalities in PA ▪ Program - Combinations of environmental, educational and motivational interventions are needed. Environmental change should be put in place before behaviour-change interventions attempted. **Conclusion**: Environmental and policy interventions have the potential to increase community-wide physical activity levels by reducing social and physical barriers to physical activity and ensuring provision of facilities and resources for people to be active. They are pivotal to the short-term and sustained effectiveness of individual-oriented behaviour change strategies.	**Disadvantaged groups**: Potential to reduce social inequalities and social isolation through increased access to local facilities in targeted areas and more effective use of public transport. **Economic evaluation**: Not documented **Criteria for evaluating evidence**: No documented **Research gaps identified**: Improved understanding of environmental correlates. More refined outcome measures developed in collaboration with other sectors eg. transport, urban planning. **Implementation Factors:** Need to focus on the social, physical, economic and policy environment. Policy interventions require involvement of multiple stakeholders. Interdisciplinary teams and coalitions needed. Include target groups and user groups. Considerable time needed to establish policy and effect environmental change, thus resources should be allocated accordingly. Establish indicators for changes in attitudes and knowledge as well as target behaviours. Baseline, monitoring and long term follow up measures should be conducted.

Physical activity 11: Minority/disadvantaged women : Community based health education and skill development

Bibliographic information	Review strategy	Summary of evidence of effectiveness	Additional information
Title: Interventions to promote physical activity among African American women **Authors:** Banks-Wallace J., Conn V. **Date:** 2002 **Type of review**: Systematic **Number of studies included**: 18 studies (7 exclusively on African American women, 11 mixed populations with a component focused on African American women). **Publication details**: Public Health Nursing, vol. 19, no. 5, pp.321-335.	**Review question**: To review the effectiveness of intervention trials designed to promote PA among African American women. **Intervention(s):** Diverse interventions, settings and measures. Exclusively focused on PA (n=4); PA plus dietary behaviours (n=14). Most studies (n=14) involved weekly education plus exercise sessions. Centre-based exercise more than once per week (n=9). Church settings (n=3). Clinical or hospital settings (n=3). Length of interventions: 6-18 weeks. Two 6-month duration interventions. Post-intervention measures taken from 2 weeks-27 months. Only 3 of these studies used a 6-month or longer follow-up. Cultural relevance of programs and resource materials was obtained by consulting the literature and conducting focus groups. **Inclusion criteria (relevance):** Studies published between 1984-2000. Interventions to increase or maintain PA among African American women. Due to the paucity of research in this area, studies involving African American women as a population group in more broad interventions were included: minimum proportion of AA women = 35% (Range 41% - 98%). Studies must include measures of PA. Content: 1. Problem-solving opportunities	**Outcomes measured**: Physical activity self-reported, body weight, BMI. **Effect size**: Not documented **Effect sustainability**: Significant increase maintained at : Immediate - 6/11 studies Short term - 4/7 with follow-up Long term - 1/3 Attrition rates were a significant problem in many studies with 5 reporting over 20% attrition. Notably, provision of transportation and childcare did not prevent high attrition rates. **Applicability**: ▪ Context - All US studies ▪ Populations - Young and middle-aged women. Overweight/obese subjects (n=12). Diabetes (n=3). Low-income (n=4). ▪ Program - see Implementation factors ▪ Transferability - Effective health interventions must be consistent with the shared beliefs, values and everyday practices of the target group. **Other effects**: Weight loss: 10/18 studies found sig. decreases in body weight and BMI. **Conclusion**: African American women can and do increase their physical activity in response to community intervention programs. However, effective health interventions must be consistent with the	**Disadvantaged groups**: see individual interventions **Economic evaluation**: Not reported **Research gaps identified**: More RCTs. Many activity measures focused on episodic exercise - studies needed which measure total activity as many AA women identify work, household chores, or volunteer activities as primary sources of PA. Stratify evaluations to identify effects for different income education levels. More studies which target non-obese AA women to identify obesity prevention strategies. **Comments**: Attrition rates were high despite strategies to retain participants: group-identity enhancing activities, prizes, monetary incentives, recommendations from community groups and enhanced accessibility of exercise centres. The most successful retention strategies were to deliver mailed or telephone interventions. **Implementation Factors:** **Supports:** <u>1. Timing of interventions:</u> Schedule interventions around community or church events. Minimise time conflicts with routine activities eg. meal times, soap operas. Dovetail with other activities eg. choir practice, parenting classes. Home visits to generate partner support. <u>2. Build support from within community</u>: Community development approach

	2. Provision of social support 3. Group exercise 4. Realistic goal setting. Although in many studies, each intervention component was not evaluated separately, the characteristics of successful interventions are listed in Implementation Factors. **Inclusion criteria (quality):** RCTs (n=8) and non-RCTs with single group pre-post designs (n=8), and a range of pre-post design without a concurrent control group. **Exclusion:** No direct measures of PA. **Review strategy:** Electronic databases 1984-2000, bibliographies of existing reviews.	shared beliefs, values and everyday practices of the target group. The inconsistent and modest changes in behaviour suggest that more research is needed to find interventions which are more effective.	essential. Gain support from African American health care providers and community and religious leaders. Involve institutions (workplaces, schools) and media catering to this population group. Build partner and children's support through home visits. Foster group ownership/identity (group name, T-shirts) <u>3. Use culturally appropriate programs and resources:</u> Consider impact of cultural relevance of the program and resource materials. eg. Acknowledge that large body size may be culturally more acceptable among this group of women so motivate participants by emphasising health benefits and sense of well-being associated with achieving weight loss goals. Train staff from target community. Involve participants as co-facilitators. **Barriers:** Neglecting to involve AA women in evaluating the success of the program with respect to the meaning of the outcomes of the program (This suggests that evaluations need to consider evaluating other benefits in addition to PA). Community issues eg. community violence, domestic violence, local funding for public health initiatives.

Physical activity 12: Education and skill development: Health Care interventions

Bibliographic information	Review strategy	Summary of evidence of effectiveness	Additional information
Title: Do primary care interventions work to promote physical activity? **Authors:** Smith B., Merom D., Harris P., Bauman A. **Date**: December 2002 **Type of review**: Systematic review Also includes narrative review of 8 systematic reviews. **Number of studies included**: 20 studies. (Single risk factor intervention (n=12) Multi-risk factor intervention (n=8)) **Publication details**: Report for the NSW Centre for Physical Activity and Health	**Review question**: To review the effectiveness of interventions undertaken with patients in primary care settings to increase physical activity participation **Intervention(s):** Effective PA-only interventions included some combination of: verbal advice, written materials including written exercise prescription and self-help booklets, behaviour change strategies, one or more counselling sessions plus telephone reinforcement calls, follow-up sessions, leisure centre vouchers, and training and resources for GPs. **Inclusion criteria (relevance):** English language. PA participation reported as primary outcome. **Inclusion criteria (quality):** RCTs or controlled quasi-experimental design. **Exclusion:** No direct measures of PA. **Review strategy:** Electronic databases 1966-2000, bibliographies of existing reviews, expert consultation (Australia and international). Aimed to include more recent and important studies than in previous reviews. Separate examination of single-risk factor and multi-risk factor interventions.	**Outcomes measured**: Physical activity , energy expenditure, aerobic capacity **Effect size**: Although there were significant increases in PA, none of the studies reported significant increases in the proportion of people who achieved the recommended levels of PA. **Effect sustainability**: Significant increases in PA were found in the following number of studies at short term (less than 6 months), medium and long term (12 months or more) follow-up. Most studies only measured short term effects. <u>PA only interventions:</u> Short term – 6 out of 8 studies Medium term – 3/6 Long term – 2/5 <u>Multi-risk factor interventions:</u> Short term – 2 out of 2 studies Long term – 4/7 **Applicability**: ▪ Context – Studies from Australia, US, UK, and Sweden ▪ Populations – Single risk factor (PA Only) interventions were for sedentary and inactive patients. Men and women. Mainly older people aged over 50 years. Included low income and minority groups but no results reported separately. ▪ Program - At long-term follow-up, there was no evidence that more intensive counselling (up to 60 mins) is any more effective than brief, opportunistic counselling (3-10 mins). Verbal advice was more	**Disadvantaged groups**: see individual interventions **Criteria for evaluating evidence**: US Preventive Services Task Force (Hahn et al 2002) frameworks were used. Public health impact was evaluated in terms of reach, adoption and implementation. **Research gaps identified**: Pilot studies to develop interventions that are feasible and acceptable for practitioners and patients. Evaluation should use valid and reliable measures of PA. They should also measure the proportion of subjects who undertake recommended amounts of PA after the intervention. More knowledge is needed about tailoring these interventions for particular sub-groups **Implementation Factors:** Supports: Training and resources for GPs. Most interventions require additional resources or re-allocate of existing resources. Barriers: Most interventions were conducted as discrete programs using paid research staff. Most interventions were not easily implemented in routine primary care settings. Difficulty in delivering interventions within the busy context of routine health care. Difficulties found in delivering interventions with multiple contacts with patients. Practitioners' lack of time and confidence in influencing patient behaviours. Few studies provided data to assess the generalisability of

		effective if accompanied by written exercise prescription and the effect was further enhanced by providing self-help booklets. Interventions were delivered by GPs, practice nurses or health educators but the effect of interventions did not appear to be related to the type of health professional that delivered the intervention. **Conclusion**: There is evidence of only 'fair' quality that health care interventions which address PA can on their own influence PA behaviour but the effects are modest and only short term.	findings.

Physical activity 13: Health Information/Social marketing - Point of decision prompts
This individual study is included because it is the first published evaluation of this type of intervention in an Australian context and which has important implications for practice.

Bibliographic information	Design & Methods	Findings
Title: Can motivational signs prompt increases in incidental physical activity at and Australian health-care facility? **Authors:** Marshall A., Bauman A., Patch C., Wilson J., Chen J. **Date**: 2002 **Publications details**: Health Education Research, vol.17, no.6,pp.743-749	**Research objective**: To evaluate whether stair-promoting signed intervention could increase the use of stairs rather than an elevator in a health-care facility **Design and setting**: Time series design over 12 weeks intervention in an Australian health care facility. **Participants**: Staff and visitors **Intervention(s):** Signs displayed for 2 weeks on two separate occasions during weeks 4-5 and 8-9 and data collected pre and post intervention. Coloured signs 80X45, 'Improve your health and fitness One step at a time…use the stairs".	**Outcome measures**: stair use (objective and self-report data) **Results**: Significant increases in stair use after first intervention phase. Second phase stayed at baseline levels and decreased below baseline during final weeks of the intervention. **Conclusion**: Stair-sign interventions produced small, brief effects which were not maintained. More research is needed to establish more effective point of choice interventions.

Physical activity 14: Information/Social marketing - Community-based intervention
This individual study from Australia is included because it was an innovative, extensive and high profile program which focused specifically on women, who are a key target sub-group. The project demonstrates successful inter-sectoral action around physical activity which involved building partnerships between a health service, local government and the community. The study outlines lessons learned and it has important implications for practice.

Bibliographic information	Design & Methods	Findings
Title: Promoting physical activity in women: evaluation of a 2-year community-based intervention in Sydney **Authors:** Ming Wen L., Thomas M., Jones H., Orr N., Moreton R., King L., Hawe P., Bindson J., Humphries, Schmidt K., Corne S., Bauman A. **Date**: 2002 **Publications details**: Health Promotion International, Vol., 17, No.2, pp. 127-137.	**Research objective**: To evaluate a multi-strategy community-based intervention to increase participation in moderate physical activity amongst women aged 20-50 years. **Design and setting**: A 2-year, multi-strategy, community based intervention targeted to women between 1997 and 1999. Quantitative and qualitative evaluation. Pre- and post- intervention telephone surveys (n=2000). **Participants**: Women aged 20-50 years, living in Concorde, a suburb of Sydney, who were sedentary or insufficiently active. **Intervention(s):** Inter-sectoral action around physical activity which involved building partnerships between a health service, local government and the community. Components: A multi-sectoral community advisory group including 2 councillors, 1 council staff member, 3 project staff. (Notably: all members belonged to the target group); a social marketing and media campaign; community walking events; initiation of walking groups; community PA classes. Visual materials: newsletters, walking maps, t-shirts.	**Outcome measures**: Self-reported walking, moderate and vigorous PA. **Results**: 6.4% reduction in the proportion of sedentary women, mainly due to increased walking. No significant increases in moderate/high PA. Increased capacity of council to facilitate physical activity through social and environmental change in the local community. **Implementation factors** <u>Strategies to increase effectiveness:</u> Involvement of existing community networks at all stages Use of council facilities for project meetings and events (which reinforced the council's social plan). <u>Strategies used to build capacity of council</u>: - representation on advisory group - regular consultation - joint planning of events - in-kind use of council facilities and resources - alignment of the project with council's social and environmental plans - collaboration on park audits, foreshore track upgrading, walking map routes <u>Barriers:</u> Negative perceptions of council staff about: - the amount of time, money and human resources involved - the length of the project, and, - the target group being too narrow. **Conclusion**: A community-based intervention targeting a specific population group can achieve positive changes in physical activity. Local government has the capacity to be involved in and sustain physical activity interventions. **Links:** King L., Hawe P. & Corne S. et al 1999, 'What is local government's capacity for partnerships in

		promoting physical activity?', *Health Promotion Journal of Australia*, vol.9, no.1, pp.39-43. **Also:** SEPA: www.heartfoundation.com.au

Physical activity 15: Environmental and policy approaches: A Rail Trail and promotional campaign (Australia)
This individual study combines an environmental intervention (construction of a walking trail) with a community-wide information campaign. It is included because there has been a lack of evidence of effectiveness of these interventions in the Australian context (NPHP 2001) and it is the first published evaluation of an Australian intervention of this kind.

Bibliographic information	Design & Methods	Findings
Title: An environmental intervention to promote walking and cycling – the impact of a newly constructed Rail Trail in Western Sydney **Authors:** Merom A., Bauman A., Vita P., Close G. **Date**: 2003 **Publications details**: Preventive Medicine, Vol.36, pp. 235-42	**Research objective**: To evaluate the impact of a local promotional campaign around a newly constructed rail trail **Design and setting**: Evaluation design: pre and post intervention telephone surveys (n=450) plus objective measures of daily bike counts. Evaluation over 3 month period. **Participants**: Adults 18-55 years, Western Sydney. **Intervention(s):** The NSW Road Traffic Authority completed a 16.5 km Rail Trail cycleway in Western Sydney, December 2000 . A 3-month promotional campaign was conducted for residents living within 5km of the trail. Campaign aimed to increase awareness of the trail and promote recreational and health benefits. Components included: local press ads, trail maps in English and 6 other languages, local radio promotion, launch event, on-site promotion at 9 city railway stations. 17,000 full-colour brochures distributed to local workplaces, high schools, motor registries and at railways stations.	**Outcome measures**: campaign reach, changes in awareness, changes in trail usage for walking and cycling. Results compared for people living 1.5 km from trail (inner) and 1.5-5km from the trail (outer). **Results**: Trail awareness increased 3-fold (inner residents) and 2.5 fold (outer). This overall 2.9% increase was significant. However, post-campaign awareness was still low (34%). Trail usage higher amongst bike-owners than pedestrians (8.9% vs 3.3%). Proximity to the trail influenced trail use. Inner residents and males were more aware of the trail. Immediately post-campaign launch, mean daily bike counts increased significantly. At follow-up, inner cyclists increased mean cycling by 0.19 hrs. Notably, outer cyclists decreased cycling time (-0.24 hrs). Weekends significantly increased trail bike-use but not school holidays. Low temperatures and rain significantly decreased use. **Minority groups:** NESB (inner) significant increase in mean cycling time by 64mins. Due to small number of this group who had taken up commuting to work. **Research gaps:** More evaluation studies in community settings **Conclusion**: The campaign had a significant influence on cyclists living up to 1.5 km from the trail but not others. For further increased trail usage, promotional and educational programs focusing on walking for inner residents are needed.