Community wide interventions for increasing physical activity (Review)

Baker PRA, Francis DP, Soares J, Weightman AL, Foster C

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[Intervention Review]

Community wide interventions for increasing physical activity

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ABSTRACT

Background

Multi-strategic community wide interventions for physical activity are increasingly popular but their ability to achieve population level improvements is unknown.

Objectives

To evaluate the effects of community wide, multi-strategic interventions upon population levels of physical activity.

Search methods

We searched the Cochrane Public Health Group Specialised Register, *The Cochrane Library*, MEDLINE, MEDLINE in Process, EMBASE, CINAHL, LILACS, PsycINFO, ASSIA, The British Nursing Index, Chinese CNKI databases, EPPI Centre (DoPHER, TRoPHI), ERIC, HMIC, Sociological Abstracts, SPORTDiscus, Transport Database and Web of Science (Science Citation Index, Social Sciences Citation Index, Conference Proceedings Citation Index). We also scanned websites of the EU Platform on Diet, Physical Activity and Health; Health-Evidence.ca; the International Union for Health Promotion and Education; the NIHR Coordinating Centre for Health Technology (NCCHTA) and NICE and SIGN guidelines. Reference lists of all relevant systematic reviews, guidelines and primary studies were followed up. We contacted experts in the field from the National Obesity Observatory Oxford, Oxford University; Queensland Health, Queensland University of Technology, the University of Central Queensland; the University of Tennessee and Washington University; and handsearched six relevant journals. The searches were last updated to the end of November 2009 and were not restricted by language or publication status.

Selection criteria

Cluster randomised controlled trials, randomised controlled trials (RCT), quasi-experimental designs which used a control population for comparison, interrupted time-series (ITS) studies, and prospective controlled cohort studies (PCCS) were included. Only studies with a minimum six-month follow up from the start of the intervention to measurement of outcomes were included. Community wide interventions had to comprise at least two broad strategies aimed at physical activity for the whole population. Studies which randomised individuals from the same community were excluded.

Data collection and analysis

At least two review authors independently extracted the data and assessed the risk of bias of each included study. Non-English language papers were reviewed with the assistance of an epidemiologist interpreter. Each study was assessed for the setting, the number of included components and their intensity. Outcome measures were grouped according to whether they were dichotomous (physically active, physically active during leisure time and sedentary or physically inactive) or continuous (leisure time physical activity, walking, energy expenditure). For dichotomous measures we calculated the unadjusted and adjusted risk difference, and the unadjusted and adjusted relative risk. For continuous measures we calculated net percentage change from baseline, unadjusted and adjusted risk difference, and the unadjusted and adjusted relative risk.

Main results

After the selection process had been completed 25 studies were included in the review. Of the included studies, 19 were set in high income countries, using the World Bank economic classification, and the remaining six were in low income countries. The interventions varied by the number of strategies included and their intensity. Almost all of the interventions included a component of building partnerships with local governments or non-governmental organisations (NGOs) (22 studies). None of the studies provided results by socio-economic disadvantage or other markers of equity consideration. However of those included studies undertaken in high income countries, 11 studies were described by the authors as being provided to deprived, disadvantaged, or low socio-economic communities.

Fifteen studies were identified as having a high risk of bias, 10 studies were unclear, and no studies had a low risk of bias. Selection bias was a major concern with these studies, with only one study using randomisation to allocate communities (Simon 2008). No studies were judged as being at low risk of selection bias although 16 studies were considered to have an unclear risk of bias. Eleven studies had a high risk of detection bias, 10 with an unclear risk and four with no risk. Assessment of detection bias included an assessment of the validity of the measurement tools and quality of outcome measures. The effects reported were inconsistent across the studies and the measures. Some of the better designed studies showed no improvement in measures of physical activity. Publication bias was evident.

Authors' conclusions

Although numerous studies have been undertaken, there is a noticeable inconsistency of the findings of the available studies and this is confounded by serious methodological issues within the included studies. The body of evidence in this review does not support the hypothesis that multi-component community wide interventions effectively increase population levels of physical activity. There is a clear need for well-designed intervention studies and such studies should focus on the quality of the measurement of physical activity, the frequency of measurement and the allocation to intervention and control communities.

PLAIN LANGUAGE SUMMARY

Community wide interventions for increasing physical activity

Not having enough physical activity leads to poorer health. Regular physical activity can reduce the risk of chronic disease and improve one's health and well being. The lack of physical activity is a common and growing health problem. To address this, 25 studies have used improvement activities directed at communities using more than one approach in a single program. When we looked at the available research, we observed that there was a lack of good studies which could show whether this approach was or wasn't beneficial. For example, some research studies claimed that community wide programs improved physical activities and other studies did not. It was not possible to determine what might work. Future research is needed with improved designs, measures of outcomes and larger samples of participants.

BACKGROUND

Physical activity is recognised as being important for reducing the overall burden of disease (US Dept. Health 1996). Very strong scientific evidence based on a wide range of well-conducted studies shows that physically active people have higher levels of health-related fitness, a lower risk profile for developing a number of

disabling medical conditions, and lower rates of various chronic diseases than do people who are inactive (US Physical Activity Guidelines 2008).

Despite the positive health effects associated with regular physical activity, physical inactivity remains a common public health problem in high, middle, and low income countries. The prevalence of physical inactivity remains high or has even increased in recent years (Bauman 2009; Guthold 2008). In addition, low income and ethnic minority adults have the highest rates of physical inactivity, and people at the top of the socio-economic scale appear to perform more leisure-time activity than those at the bottom of the scale (Crespo 2000; Crespo 2001; Gidlow 2006).

The lack of physical activity cannot be attributed solely to personal motivation and so countries tackling this complex issue are increasingly electing to employ multi-component approaches (that is informational, behavioural, and environmental) in increasing a population's physical activity (Kahn 2002; WHO 2004).

Description of the intervention

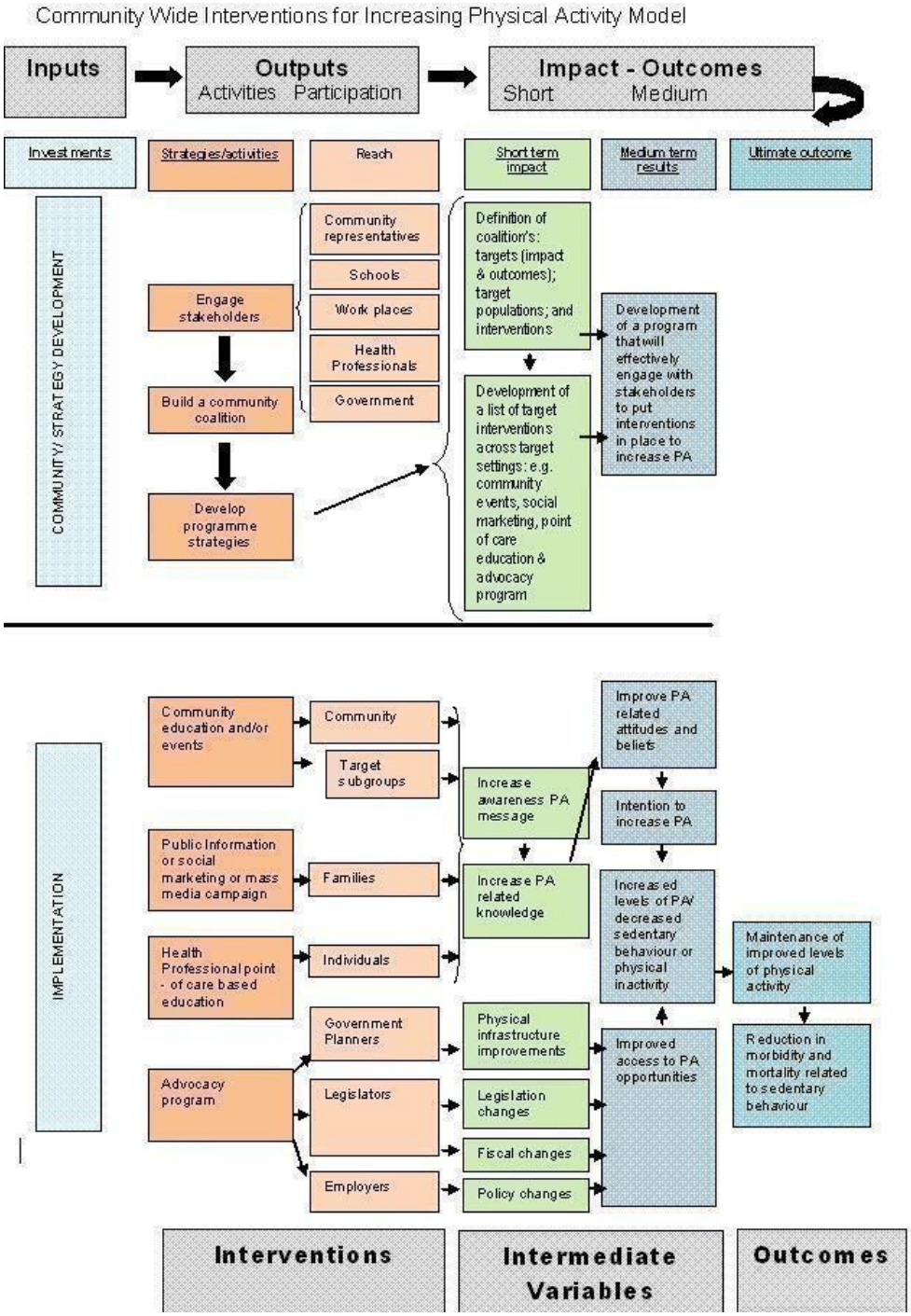
Community wide interventions are attractive in that they aim to improve the health risk factors (especially low physical activity) of a whole population. These strategies generally involve investment in visible infrastructure and planning initiatives with the aim of producing long-lasting benefits for the community. They differ from singular community based strategies which may target only a particular subset of the population. Community wide interventions offer a number of advantages over offering only one approach to a population. They operate at a series of levels to impact on behaviour. These levels reflect social-ecological models of health and include changes to policies and environments, and involve mass media and individually focused activities (for example primary healthcare screening).

One systematic review has characterised these interventions into four types (Cavill and Foster 2004). These are (1) comprehensive integrated community approaches, where physical activity is part of an overall risk factor reduction programme (for example the Minnesota Heart Health Project (Luepker et al 1994)); (2) community wide 'campaigns' using mass media (Renger 2002); (3) community based approaches using person-focused techniques; and (4) community approaches to environmental change. The third category includes programmes that use methods and strategies such as one-to-one counselling, classroom instruction, and cognitive-behavioural strategies but in community facilities and settings such as church halls or community centres (Sharpe 2003). The final category includes programmes that use some form of community action, often including a coalition or advocacy group, to make positive changes to the physical environment (King 1994).

How the intervention might work

We developed a logic model to capture the broad range of different approaches found in community interventions (Figure 1). This framework divides the actions into two phases, a community strategy development phase and an implementation phase, as there is some evidence to suggest such approaches appear more sustainable in the longer term (Foster 2000). The community strategy development phase describes the construction phase of a community intervention. Actions include identification of target groups, populations, the setting for delivery, stakeholders, and intervention options. The implementation phase describes the delivery of actions to encourage physical activity behaviour change. Actions might include mass media campaigns, community participation or educational events, advocacy, and environmental changes. The outputs of both phases might be measured in a range of variables from short to long-term outcomes. For example, intermediate outcomes could include knowledge of the benefits of an active lifestyle or improved access to physical activity. Examples of long-term outcomes could be a reduction in morbidity and mortality related to physical activity behaviour. Changes in the proximal and intermediate variables, such as knowledge or attitudes, are likely to be more amenable to change through communication campaigns (Cavill and Bauman 2004).

Figure 1. Logic Model for Community Wide Interventions for Increasing Physical Activity



Why it is important to do this review

Many studies of community wide interventions have been undertaken but few have published evaluations of their process or impact. Although the popularity of these interventions is increasing, there was an absence of systematic reviews combining all the global evidence currently available. We believed a review would enable a more in-depth exploration of the effectiveness of the interventions as well as investigating equity and inclusiveness issues. Earlier reviews do not include the more recent studies (Kahn 2002). It is hoped that this Cochrane review will be particularly useful to those decision makers with the responsibility of selecting and implementing community wide investments. The application of the logic model for this review illustrates the belief that community wide interventions should be understood more broadly than as being just the sum of several interventions that have been implemented in a community.

OBJECTIVES

Primary research objective

We sought to determine the effects of community wide, multi-strategic interventions upon community levels of physical activity.

Secondary research objectives

We addressed the following predetermined research objectives.

1. To explore whether any effects of the intervention are different within and between populations, and whether these differences form an equity gradient.
2. To describe other health (e.g. cardiovascular disease morbidity) and behavioural effects (e.g. diet) where appropriate outcomes are available.
3. To explore the influence of context in the design, delivery, and outcomes of the interventions.
4. To explore the relationship between the number of components, duration and effects of the interventions. As an addition to the published protocol, we sought to understand more explicitly whether the intensity of the community wide intervention can explain differences of effects between studies.
5. To highlight implications for further research and research methods to improve knowledge of the interventions in relation to the primary research objective.

METHODS

Criteria for considering studies for this review

Types of studies

It is recognised that public health and health promotion interventions are evaluated using a wide variety of approaches and designs. We permitted the inclusion of cluster randomised controlled trials, randomised controlled trials (RCT), quasi-experimental designs which used a control population for comparison, interrupted time-series (ITS) studies, and prospective controlled cohort studies (PCCS). Only studies with a minimum six-month follow up from the start of the intervention to measurement of outcomes were included. The six-month period was considered as the minimal time frame as physical activity behaviour changes, as understood by the Prochaska and DiClemente model (Prochaska 1992), are established in the action stage which is when the individual actively engages in the new behaviour. For physical activity, the highest likelihood for relapse occurs within the first six months of starting a regular program (Dishman 1994).

Types of participants

The term community wide generally refers to either: 1) an intervention directed at a geographic area, such as a city or a town defined by geographical boundaries; or 2) an intervention directed toward groups of people who share at least one common social or cultural characteristic.

As the focus of the review is whole-of-community interventions, we defined participants in the included studies comprising those persons residing in a geographically defined community, such as a village, town, or city. We excluded interventions which were whole of state or country. Although some of the strategies targeted individuals with chronic disease, collectively the participants included in the studies needed to be representative of the whole community and not restricted to a particular geographic subregion or subgroups. To be included, a strategy must have shown intent to be comprehensive in reaching the targeted community. Participants must have been free living and not part of any institutionalised community, such as those incarcerated in prison.

Types of interventions

It is recognised that to achieve a whole of community approach requires more than a singular strategy, as changing behaviour is a difficult task (Mummery 2009). Although little is known about how to reach the most disadvantaged groups in the community (Mummery 2009), we defined a community wide approach as one which should include strategies that have, within their scope, outreach to many disadvantaged groups. For this review, we defined a

community wide intervention as one which has at least two broad strategies aimed at physical activity that are consistent with the four types described by Cavill and Foster 2004. The following are examples of suitable strategies which would be components of an integrated community wide intervention and are consistent with the logic model.

1. Social marketing through local mass media (television (TV), radio, newspaper).
2. Other communication strategies (posters, flyers, information booklets, web sites, maps) to raise awareness of the project and provide specific information to individuals in the community.
3. Individual counselling by health professionals (both publicly and privately funded), such as the use of physical activity prescriptions.
4. Working with voluntary, government, and non-government organisations, including sporting clubs, to encourage participation in walking, other activities, and events.
5. Working within specific settings such as schools, workplaces, aged care centres, community centres, homeless shelters, and shopping malls. This may include settings that provide an opportunity to reach disadvantaged persons.
6. Environmental change strategies such as creation of walking trails and infrastructure with legislative, fiscal, policy requirements and planning (having ecological validity) for the broader population.

Studies that were community based but did not include at least two of the six strategies were excluded. We recognised that single strategy interventions (for example mass media only) are likely to be topics of other reviews and were beyond the scope of this review.

Types of outcome measures

Primary outcomes

Whilst it is desirable to focus on a small range of outcome measures, the context for research in this area of health is that measures of physical activity at a population level are complex (both the measures and the methods) and international consensus on gold standards has not been reached.

To be included in this review, studies needed to measure physical activity in the study population. Physical activity could be quantified using a variety of measurements, for example percentage of people active or inactive, frequency of physical activity, percentage meeting recommendations, percentage undertaking active travel; and other objective or subjective methods (for example accelerometers, pedometers, self-reported questionnaires, diaries) (Bassett et al 2008).

Secondary outcomes

Data on other related measures of health were extracted.

1. Measures of health outcomes and risk factor status (e.g. cardiovascular disease, body mass index (BMI), energy expenditure).
2. Measures of other health behaviours (e.g. sedentary behaviour, dietary patterns, or smoking).
3. Intermediate outcomes (e.g. knowledge and attitudes).
4. Any adverse outcomes that are reported (e.g. unintended changes in other risk factors, opportunity cost, and injuries).

Process measures

Measures relating to the process of implementing an intervention were also extracted.

Search methods for identification of studies

Electronic searches

We searched the following databases:

- Cochrane Public Health Group Specialised Register;
- *The Cochrane Library;*
- MEDLINE, MEDLINE In-Process;
- EMBASE;
- CINAHL;
- PsycINFO ;
- LILACS;
- ASSIA;
- British Nursing Index (BNI);
- Database: CAJ,CCND,CPCD,CJSS,CMFD,CDFD, Chinese CNKI databases (http://www.global.cnki.net/grid20/index.htm);
- EPPI Centre;
- DoPHER;
- TRoPHI;
- ERIC;
- Health Management Information Consortium (HMIC, grey literature);
- Sociological Abstracts;
- SPORTDiscus;
- Transport Database TRIS;
- Web of Science
    - Science Citation Index, Social SciencesCitation Index and Conference Proceedings Citation Index,
    - Science Citation Index, Social SciencesCitation Index and Conference Proceedings Citation Index.

We searched the following websites for relevant publications, including grey literature:

- EU Platform on Diet, Physical Activity and Health;
- http://health-evidence.ca;
- IUHPE (International Union for Health Promotion and Education);

- NCCHTA (http://www.ncchta.org);
- NICE guidelines (http://www.nice.org.uk);
- SIGN guidelines (http://www.sign.ac.uk);
- US Centres for Disease Control and Prevention (http://www.cdc.gov/);
- World Health Organization (http://www.who.int/en/).

Searches were carried out for studies published from January 1995 to November 2009. The search strategies and details of search dates can be found in Appendix 1. The MEDLINE search was developed for precision and sensitivity with advice from the Public Health Group's Trials Search Coordinator and tested against a set of 38 relevant studies from across the globe. The search was then adapted to the remaining databases using database-specific subject headings, where available.

Searching other resources

In addition reference lists were followed up of all relevant systematic reviews, guidelines and included primary studies.

The following experts in the field were contacted to ask if they were aware of any recently published, in-press or unpublished studies: Dr Harry Rutter (National Obesity Observatory, Oxford), Dr Nick Cavill, (Oxford University), Mr Glen Austin (Queensland Health), Mr Jiandong Sun (Queensland University of Technology), Professor Kerry Mummery (University of Central Queensland), Professor Gregory W Heath (University of Tennessee College of Medicine) and Professor Ross C Brownson (Washington University in St Louis).

The past 12 months of the six journals that contained two or more studies (completed or in progress) meeting review inclusion criteria were handsearched:

- American Journal of Public Health;
- Australia Health Promotion;
- BMC Public Health;
- Norsk Epidemiologi;
- Preventive Medicine;
- Scandinavian Journal of Public Health.

Through various methods, including contact with authors, the review team obtained a full-text PDF or an abstract containing sufficient details to determine eligibility of all potentially relevant studies. Non-English studies were all examined by readers with appropriate language skills to determine whether they were to be excluded or included.

Data collection and analysis

Selection of studies

The initial search strategy produced a listing of more than 17,500 citations. An initial screening of titles and abstracts was undertaken to remove those which were obviously outside the scope of the review. Authors were overly inclusive at this stage and, if in doubt, a paper was left in. The full text was obtained for the papers potentially meeting inclusion criteria (based on the title and abstract only) and multiple publications and reports on the same study were linked together. All the full text papers obtained were then screened by two review authors (PB and shared between DF, JS, and CF) who compared the description of the intervention with the logic model (Figure 1) to assess whether the required components of a community wide intervention and permissible study designs were fully met. Where there was a persisting difference of opinion, a third review author was asked to review the paper in question and a consensus was reached between the three review authors.

Data extraction and management

Data were extracted for all the studies that met the inclusion criteria. For each study, two review authors (PB and shared between DF, JS, and CF) independently completed data extraction forms, which were tailored to the requirements of this review. Quality criteria questions for randomised controlled trials (RCTs), controlled clinical trials (CCTs), controlled before and after (CBA) studies, and ITS study designs were incorporated into the data extraction form. A check list was used to ensure inclusion of data relevant for health equity (Ueffing 2009). In addition, multiple reports and publications of the same study were assembled and compared for completeness and possible contradictions. Data were extracted from companion studies that reported findings on the process evaluation of the intervention. The specific components present in the primary paper and companion publications were reviewed using the logic model (Figure 1) to assist in the categorisation of studies and interpretation of results where heterogeneity was present.

Numerical data for analysis were extracted from the included studies and managed in an Excel spreadsheet.

The data extraction form was first piloted by three review authors (PB, DF, and JS) to assess its ability to capture study data and inform assessment of study quality. Problems in the use of the form that were identified were resolved through discussion and the form was revised as required.

Where studies reported more than one endpoint per outcome, the primary endpoint identified by the authors was extracted. Where no primary endpoint was identified by the authors, the measures were ranked by effect size and we extracted the median measure (Curran 2007). Measures of physical activity or sedentary behaviour that are based upon meeting a national standard were noted and the potential for unequal comparisons identified. We collected information on how physical activity was reported, that is whether it was through self-report in a telephone survey, or

devices such as pedometers. Data extracted independently by the review authors were compared and any differences were resolved through discussion.

Assessment of risk of bias in included studies

Only studies that met the inclusion criteria were assessed and reported in a risk of bias table as per the recommendation (Higgins 2008).

Two review authors (PB and one other author) assessed the risk of bias for each study. Analysis of non-randomised controlled trials followed the recommendations in Chapter 15 of the Cochrane Handbook for Systematic Reviews of Interventions. Where there was disagreement between review authors in risk of bias assessment, this was resolved by discussion and consensus.

Studies were assessed for the five general domains of bias: selection, performance, attrition, detection, and reporting, as well as for an additional category to capture any additional concerns pertaining to the study quality that didn't fit distinctly into either of the five domains. For example, this additional category included instances where the statistical analyses presented in the included study was problematic and failed to adjust for baseline differences between the control and intervention group, or failed to address what appeared to be regression to the mean. This category was also applicable if there appeared to be a 'head-start' or other advantage for the intervention community. Each was assessed with answers of 'Yes' indicating low risk of bias, 'No' indicating high risk of bias, and 'Unclear' indicating either lack of information or uncertainty over the potential for bias. Studies were judged overall as 'Low', 'Unclear', or 'High' risk of bias after being given the overall consideration of the study design and size, and the potential impact of the identified weaknesses noted in the table for each study.

Specifically, assessment of performance bias included identification of explicit statements of measures undertaken to avoid contamination (that can occur when delivery the intervention group also receives the intervention) such as spatial separation, non delivery of the program to the control communities and minimisation of wide-reaching mass media. We also considered measurement of the community's awareness of the message obtained through community surveys, both of the intervention and control communities. Additionally, integrity of the intervention was considered and performance bias was assessed as being present when the study's process evaluation (perhaps an additional publication) described instances where the program was not delivered as planned.

Studies were assessed as high risk of detection bias when incomplete data was inadequately defined or, particularly in cross-sectional sampling, where the characteristics of the follow-up groups varied significantly from the baseline groups.

Detection bias was assessed to be at low risk where measurement tools were used in their entirety, the outcome assessment was blind (if deemed appropriate), the outcome measure metrics were valid, the measure was of sufficient quality (for example assessed over the period > one day) and the sample was representative (for example random sampling of the community).

Reporting bias was assessed as being low risk if the reports appeared to be free from selective reporting and the measures reported were complete and matched the aims of the studies. Studies where follow-up measurement was absent, or appeared to be deliberately withheld, were assessed as at 'high risk' of reporting bias.

The review authors determined a priori that the best evidence (both contextually relevant and representing the purpose of the intervention) was likely to come from cluster RCTs and CBA studies. Although this differs from the usual evidence hierarchy (NHMRC 1999) (which emphasises randomised controlled trials for assessment of interventions), it is considered a better approach than the problematic application of the usual criteria when appraising the evidence for social and public health interventions (Petticrew 2003).

Measures of intervention effect

The effect sizes for dichotomous outcomes were expressed as relative risk (RR) and risk difference (RD) in the first instance. In addition, given the important baseline differences between intervention (I) and control (C) groups, our analyses adjusted the estimate of effect based on the differences at baseline. Therefore, for dichotomous outcomes we calculated the following.

1. Net percentage change from baseline = $((I_{post} - I_{pre})/ I_{pre}) - ((C_{post} - C_{pre})/ C_{pre}) \times 100$.
2. Adjusted risk difference = $(I_{post} - I_{pre}) - (C_{post} - C_{pre})$.
3. Adjusted relative risk = $(I_{post} / C_{post})/(I_{pre} / C_{pre})$. Confidence intervals (95%) were calculated using the Wald-test.

For continuous outcomes we calculated the following.

1. Post mean differences (PMD) = $Imean_{post} - Cmean_{post}$
2. Adjusted mean difference = $[(Imean_{post} - Cmean_{post}) - (Imean_{pre} - Cmean_{pre})]$
3. Adjusted percentage change relative to the control group [= $((Imean_{post} - Cmean_{post}) - (Imean_{pre} - Cmean_{pre}))/ Cmean_{post}$] x 100.

Unit of analysis issues

Studies allocated by clusters that did not account for clustering during analysis were not re-analysed. This was because these studies were not randomised, and there were only a small number of clusters and so clustering would have a minimal effect.

Dealing with missing data

Studies that were found to have a high degree of incomplete data for assessment (that is less than 40% of data) during the risk of bias assessment, or presented evidence that missing data were likely to be associated with the reported intervention effect were excluded. Missing data were also captured in the data extraction form and reported in the risk of bias table. The authors were contacted to

try and acquire missing data. In some instances this included the use of a Chinese speaking epidemiologist.

Assessment of heterogeneity

Due to heterogeneity in the study designs employed, the populations in which the interventions were conducted, and the interventions themselves, no meta-analysis was conducted.

Assessment of reporting biases

We considered plotting trial effect against standard error and presenting this as funnel plots (Higgins 2008) to determine whether asymmetry could be caused by a relationship between effect size and sample size or by publication bias (Egger 1998). However, given the high risks of bias in the data and the poor quality of measurement undertaken in the studies, we decided against doing this.

Intensity of intervention

We categorised the intensity of the community wide intervention to assess whether intensity could account for differences that existed in the outcomes between studies. The intensity of the intervention was categorised based on the following six characteristics and attributes that we hypothesised would be important in understanding differences in the effectiveness of the community wide intervention; two review authors (PB and DF) independently assessed each characteristic as 'more intensive', 'less intensive', or 'unclear':

- development of community partnerships and coalition (first level of the logic model 'Community/Strategy Development'), showing evidence of engaging stakeholders and building a community coalition;
- levels of intervention (second level of the logic model 'Implementation'), intervening at the individual (personal), social (interpersonal) and environmental (physical and legislative) levels;
- reach of the strategies (second level of the logic model), the intervention reaches the whole of the community, multiple sectors of the community, targets subgroups and awareness > 85%;
- magnitude of the intervention, the extent of continuous provision of the intervention through the intervention period (volume of the intervention): frequency and duration of strategies, high intensity typified as sustained integration of intervention;
- description of cost, where stated the cost per person for the intervention (excluding the evaluation) in the context of the year and the location, presumably of magnitude;
- statement of intensity by the authors, descriptors found within the studies where the investigators themselves used descriptors such as 'high impact' or 'significant cost'.

We categorised the overall assessment of intensity for each study as 'high', 'medium', 'low', or 'unclear'. Given that the six categories we assessed on are not distinct, and the sufficiency of detail varies between the studies, each review author independently made the overall assessment using subjective informed determination rather than a pre-defined algorithm. Discrepancies were resolved by discussion.

Data synthesis

Continuous outcomes were reported on the original scale where possible. We predetermined we would undertake a meta-analysis only when data were clinically homogeneous. We followed Chapter 9: 'Analysing data and undertaking meta-analyses' of the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2008). As data were not available that were sufficiently similar and of sufficient quality, a meta-analysis was not performed. We predetermined that evidence from differing study designs and outcome types were not to be combined in the same forest plot (Christinsen 2009) and thus felt it inappropriate to include one.

Subgroup analysis

We predetermined that, where sufficient data were available, we would perform additional subgroup analyses to compare outcomes by: types of study designs; group effects for people who shared a common social, cultural, or health status characteristic (age, gender, ethnicity); reach of intervention and intensity of intervention (derived from use of the logic model and process evaluations). We had intended that a subgroup analysis would also explore whether there was likely to be a relationship of effect to disadvantage and whether an equity gradient was present. However, given the limitations of the data both in its quality and the absence of subgroup reporting no further subgroup analysis could be undertaken.

Sensitivity analysis

We had intended to carry out a sensitivity analysis for studies with low risk of bias, however as no such studies exist we could not proceed.

Summary of findings

We had intended to undertake a summary of findings table for the primary outcomes related to physical activity and sedentary behaviour using GRADEprofiler (Cochrane IMS 2009). This was to be created using the measures for the primary outcomes identified as being most reliable and which predominated. Given very few studies had reliable measures of physical activity and sedentary behaviour, and much of the data were incomplete, this was not done. However we may reconsider this in the future.

As conducting meta-analyses was deemed inappropriate, alternative summary tables have been prepared using narrative analysis of the included studies.

RESULTS

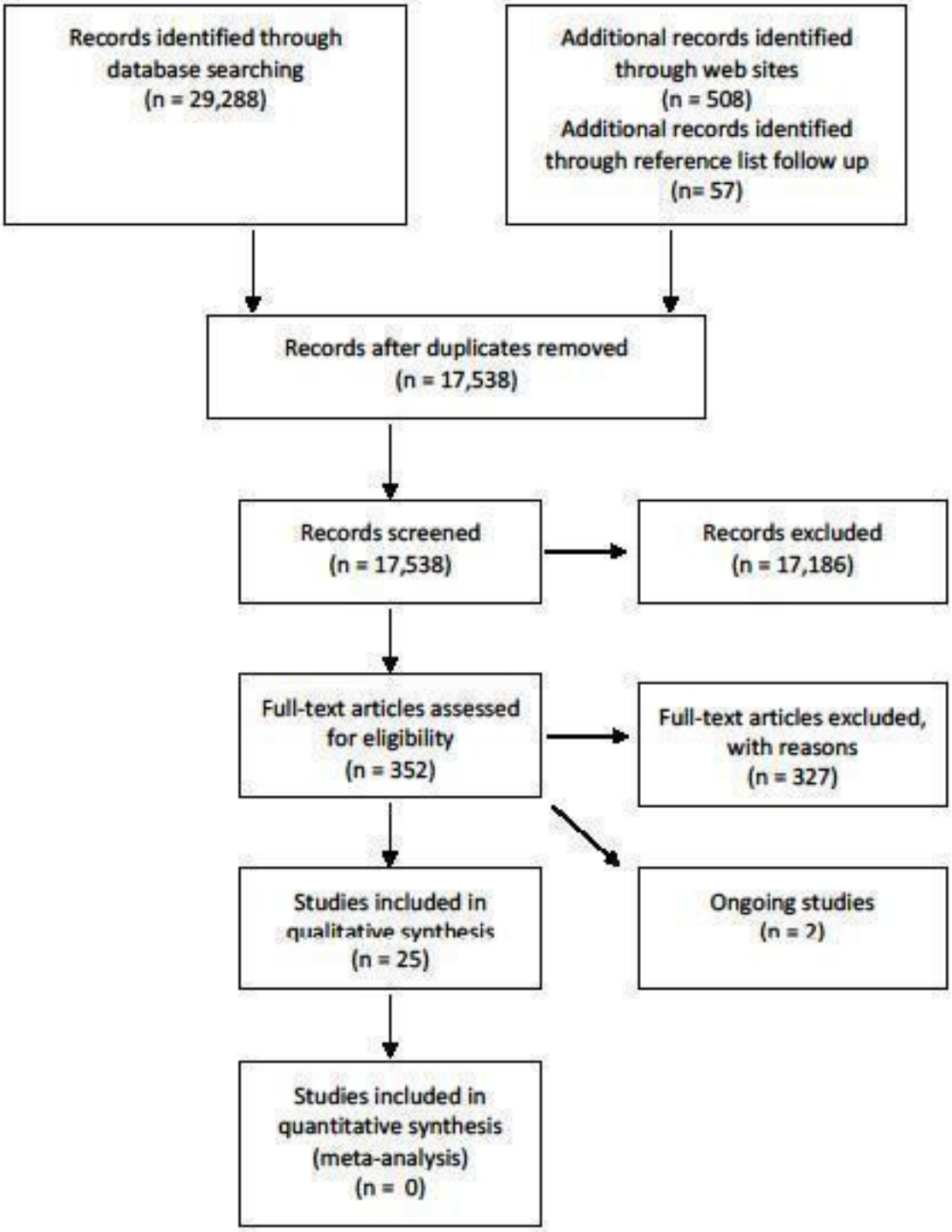
Description of studies

See: Characteristics of included studies; Characteristics of excluded studies; Characteristics of ongoing studies.
See Characteristics of included studies; Characteristics of excluded studies

Results of the search

Electronic searches yielded 17,538 hits following removal of duplicates (Figure 2), of which 352 were considered potentially eligible and assessed in full text. All searches were completed in September to November 2009. The results of the searches of the electronic databases and websites are found in Table 1 and Table 2, respectively. The full search strategies, dates, and number of hits are given in Appendix 1. After the selection process had been completed, 25 studies were included in the review (Brown 2006; Brownson 2004; Brownson 2005; De Cocker 2007; Eaton 1999; Goodman 1995; Gu 2006; Guo 2006; Jenum 2006; Jiang 2008; Kloek 2006; Kumpusalo 1996; Luepker 1994; Lupton 2003; Nafziger 2001; Nishtar 2007; NSW Health 2002; O'Loughlin 1999; Osler 1993; Reger-Nash 2005; Sarrafzadegan 2009; Simon 2008; Wendel-Vos 2009; Young 1996; Zhang 2003).

Figure 2. Flowchart of search process based on the PRISMA template (Moher 2009)



Included studies

Communities in the included studies

NIneteen of the included studies were set in high income countries (using World Bank economic classification). Of these, nine studies were conducted in North America (Brownson 2004; Brownson 2005; Eaton 1999; Goodman 1995; Luepker 1994; Nafziger 2001; O'Loughlin 1999; Reger-Nash 2005; Young 1996), two in Australia (Brown 2006; NSW Health 2002), and eight in Europe (De Cocker 2007; Jenum 2006; Kloek 2006; Kumpusalo 1996; Lupton 2003; Osler 1993; Simon 2008; Wendel-Vos 2009). The remaining six studies were set in low income countries: four in China (Gu 2006; Guo 2006; Jiang 2008; Zhang 2003); one in Iran (Sarrafzadegan 2009); and one in Pakistan (Nishtar 2007).

The size of the community in which the intervention took place varied greatly, from two small villages with a total population of less than 1000 inhabitants (Kumpusalo 1996) to a large region with a population of 1,895,856 (Sarrafzadegan 2009). Similarly the location of the communities varied with nine studies taking place in what could be considered rural or remote settings and the remaining 16 studies located in urban centres or cities.

Interventions in included studies

We found substantial differences in the interventions used in the included studies. Almost all of the interventions included a component of building partnerships with local governments or non-government organisations (NGOs) (22 studies). Other strategies used in the interventions included some form of individual counselling by health professionals (18 studies), mass media campaigns (17 studies), or other communication strategies (19 studies). Some studies worked in specific settings (21 studies) and used environmental change strategies (10 studies).

Only three interventions investigated by the included studies contained elements of all six of the components described in the inclusion criteria (Brown 2006; Luepker 1994; Goodman 1995) (see Methods section). Three interventions were comprised of five components, 10 of four components, seven of three components, and two of two components (Table 3).

Theoretical perspectives

Interventions were developed from a variety of theoretical perspectives, although many studies did not identify any such perspective in their papers. Six of the studies sought to increase physical activity in a community by developing an intervention based on an ecological approach (Brown 2006; Brownson 2005; De Cocker 2007; Jenum 2006; Simon 2008). Four interventions developed interventions with the stages of change model as their guiding framework (Brownson 2005; Kloek 2006; Reger-Nash 2005; Wendel-Vos 2009) while four studies used the social learning model (Eaton 1999; Luepker 1994; O'Loughlin 1999; Osler 1993). Two studies used the community empowerment model for developing their interventions (Jenum 2006; Lupton 2003). Other theoretical approaches used included behaviour change of self-efficacy (O'Loughlin 1999), persuasive communications theory (Luepker 1994) and community organisation principles (Kloek 2006; Osler 1993). Of note, a number of studies described basing interventions or components of interventions on multiple models.

Intensity of Interventions

A subjective assessment of the intensity of each intervention was conducted based on the consideration of six criteria as described in the methods section. Nine studies were judged to be high intensity, 10 of medium intensity and six of low intensity (Table 4). Categorisation of high intensity was typically assigned to an intervention which acted on multiple levels within a community via multiple strategies as understood by the logic model (Figure 1). For example, the Brown 2006 study used mass media, as well as other forms of communication to increase awareness of physical activity. The study also promoted self monitoring and goal setting using a website and provided access for individuals to pedometers and logbooks. Counselling by health professionals was another mode of intervention and a number of setting specific initiatives were conducted. The investigators also collaborated with the local government in improving the environment for physical activity by repairing walking tracks and creating signage and maps. Importantly also, this intervention had the express intent of increasing the physical activity of the whole population, whereas some interventions included in this review targeted a range of behaviours other then physical activity. O'Loughlin 1999 was one such study which with quite a modest budget (when compared to some of the larger interventions) employed multiple strategies in targeting smoking and diet along with physical activity. Given these factors it was considered to be of moderate intensity.

The interventions studied by Gu 2006, Jiang 2008 and Zhang 2003 reached every individual in their target communities through quite substantial contacts such as repeated door to door visitation and health screening. As such the extensive reach of the intervention combined with what is a potentially significant dose led to their classification as high intensity despite them being very different from Brown 2006. Conversely most of the interventions judged as being of low level intensity had a much poorer reach into the communities. Indeed, several of the studies judged as being of low intensity were described by their authors as being of low intensity or low cost (Osler 1993; Simon 2008). In the case of Osler 1993 the low cost of the intervention was demonstrated

in the limited amount of activity that took place as compared to the more intense interventions. Similarly, Simon 2008 was also judged as a low intensity intervention as, while it aimed to reach the whole community, the vast majority of its activities were targeted at one section of the community (in this case adolescents attending school).

Outcome measures

To be included in the review, the study had to include a measurement of physical activity. A variety of dichotomous and continuous outcomes were used in these studies. Eight studies reported the proportion of participants attaining a certain level of physical activity (Brown 2006; Jiang 2008; Kloek 2006; Lupton 2003; NSW Health 2002; Reger-Nash 2005; Sarrafzadegan 2009; Wendel-Vos 2009). The inverse of these outcomes was the reporting of the proportion of participants who were physically inactive or sedentary, that is failing to attain a defined level of physical activity (Eaton 1999; Jenum 2006; Nafziger 2001; Osler 1993; Goodman 1995). Three other studies also reported the percentage of participants attaining a certain level of physical activity but prescribed that this had to have taken place during leisure time (Kumpusalo 1996; Luepker 1994; Nishtar 2007).

Time spent being physical active during leisure time (for example as hours per week) was also reported as a continuous outcome in three studies (De Cocker 2007; Simon 2008; Wendel-Vos 2009). Other continuous outcomes of physical activity reported in the included studies included walking (Brownson 2004; Brownson 2005; De Cocker 2007; Wendel-Vos 2009) and energy expenditure (Kloek 2006; Sarrafzadegan 2009).

Most of the included studies also measured other behaviours and health outcomes related to chronic disease. Behaviours measured included smoking, drinking of alcohol, fruit and vegetable intake, fat and junk food intake and body mass index. Knowledge and attitudes towards physical activity and health knowledge were also reported in some studies. Health outcomes measured included chronic disease such as diabetes and hypertension, obesity and laboratory measures such as vitamin C, plasma and cholesterol levels. Reviewing the findings of these measures was not the objective of this review and so they have not been explored here.

Excluded studies

The Excluded studies table lists the studies excluded and the reasons determined. The study design (n = 66) or the intervention (n = 72) not meeting the inclusion criteria were the predominant reasons for studies being excluded at this stage of the selection process. In 32 cases the study was not targeted at the entire community, and in 16 cases the population was not inclusive. In one case the study described the intervention without providing any results.

Risk of bias in included studies

Study designs in included studies

All of the studies have been described as controlled before and after studies with the exception of one controlled interrupted time series (Luepker 1994), one cluster cohort study (O'Loughlin 1999), and one cluster randomised controlled trial (Simon 2008).

Risk of bias in included studies

All included studies were assessed for their risk of bias. Sixteen studies were identified as being of a high risk of bias (Brown 2006; Brownson 2004; De Cocker 2007; Gu 2006; Guo 2006; Jenum 2006; Kumpusalo 1996; Lupton 2003; NSW Health 2002; O'Loughlin 1999; Osler 1993; Reger-Nash 2005; Simon 2008; Wendel-Vos 2009; Young 1996; Zhang 2003). Nine studies were found to have an unclear risk of bias (Brownson 2005; Eaton 1999; Goodman 1995; Jiang 2008; Kloek 2006; Luepker 1994; Nafziger 2001; Nishtar 2007; Sarrafzadegan 2009), with no studies found to have a low risk of bias. As only one of the studies was randomised, selection bias was a major risk for these studies. This was exacerbated as many of these studies only included one measurement point pre-intervention and one post-intervention, and in a number of the studies there were differences in important baseline characteristics between the study groups.

To be considered as low risk, allocation of intervention and control should occur by randomisation (for example cluster randomised control trial) rather than by allocation of the intervention community. The non-randomised controlled trials could have been assessed as lower risk if the measurement was repeated pre and post-intervention, to determine whether the changes were a result of trends toward the mean or the result of imprecision of the outcome measures. The measurement metrics should be both valid and reliable for population level interventions, avoid subjective self-report assessment, and be over a period of time > one day. The individuals sampled should be representative of the population and include those difficult to reach. Where measurement is undertaken by telephone survey, the response rate should ideally adjust for the percentage of residences without land-lines. Studies at low risk of bias should, in the publication of results, include all of the measures stated in the study protocol and all of those reported in initial publication of the study.

Selection bias

Selection bias was a major concern with these studies, with only one study using randomisation to allocate communities (Simon 2008). No studies were judged as being at low risk of selection bias although 19 studies were considered to have an unclear risk of bias (if the groups were comparable at baseline for important potential confounders; and if the assessors judged that if the communities were reversed, it is likely that the same outcome would be achieved) (Brownson 2004; Brownson 2005; De Cocker 2007; Eaton 1999; Goodman 1995; Gu 2006; Guo 2006; Jenum 2006; Jiang 2008;

Kloek 2006; Luepker 1994; Nafziger 2001; Nishtar 2007; NSW Health 2002; O'Loughlin 1999; Osler 1993; Sarrafzadegan 2009; Simon 2008; Zhang 2003).

Performance bias

Twelve studies were judged as having a low risk of performance bias (Brownson 2005; Eaton 1999; Guo 2006; Jiang 2008; Kloek 2006; Luepker 1994; Nafziger 2001; Nishtar 2007; O'Loughlin 1999; Reger-Nash 2005; Sarrafzadegan 2009; Wendel-Vos 2009). While information on the blinding of communities was rare, these studies were judged as being at low risk of contamination and provided evidence of good integrity in the delivery of the intervention.

Attrition bias

Eleven studies were assessed as being at low risk of attrition bias (Brown 2006; De Cocker 2007; Eaton 1999; Goodman 1995; Jiang 2008; Luepker 1994; Nafziger 2001; Nishtar 2007; Sarrafzadegan 2009; Simon 2008; Zhang 2003). There were no cases of communities withdrawing from the studies.

Detection bias

Twelve studies had a high risk of detection bias, 10 with an unclear risk and three with low risk (Kloek 2006; Nishtar 2007; Sarrafzadegan 2009). Assessment of detection bias included an assessment of the validity of the measurement tools and quality of outcome measures.

Reporting bias

Three studies had a high risk of reporting bias (Brown 2006; Gu 2006; Jenum 2006), with three assessed as being unclear and 19 as low risk of bias. In the studies judged as having a high risk of reporting bias, there was evidence to indicate that outcomes important to the study were collected but were not reported (as confirmed through communication with the authors). Ideally, access to study protocols would help with the process of accessing reporting bias, however in most cases this was not possible. Some studies however did publish papers describing the intervention and evaluation methods prior to the final evaluation of the study thus enabling some scrutiny of reporting bias.

Other bias

One study was judged as being at high risk of other bias (Brownson 2004) having had a 'head start' with several years of preparation in the intervention community, which was deemed to provide it with an advantage.

Effects of interventions

Physical activity - dichotomous outcomes

Twenty-one studies reported physical activity as some form of dichotomous measure.

Eight studies reported physical activity measured as the attainment of a pre-defined amount of physical activity (Brown 2006; Brownson 2005; Jiang 2008; Kloek 2006; Lupton 2003; NSW Health 2002; Reger-Nash 2005; Sarrafzadegan 2009; Wendel-Vos 2009) (Table 5). Only one of these studies found the intervention to be effective across the entire population in an intense intervention in urban Beijing (Jiang 2008). Lupton 2003 and Brown 2006 found the interventions to be effective in the male and female populations of the targeted communities respectively. The remaining studies found no evidence of effect.

Jiang 2008 reported an increase in regular physical activity (adjusted RR 1.20, 95% CI 1.09 to 1.31) for an intervention involving intensive contact with individuals in urban communities in Beijing. The intervention had very substantial penetration into the community with quarterly 'door-to-door' distribution of handouts, counselling by health practitioners and the identification of those within the community with high risk factors through an intensive individual screening campaign in which 73% of the community participated.

The Finnmark Intervention study (Lupton 2003), aimed at improving cardiovascular risk factors in a small arctic community in Norway, reported a significant increase (P = 0.047) in males being physically active as defined as accruing a minimum of four hours of moderate physical activity over a week during the last year. This was measured six years after the initial baseline measurement and commencement of an intervention which involved the engagement of the community largely through activities run by sporting clubs and associations. Unfortunately, no significant change was found in the female population (P = 0.151) and the adjusted RR for the entire population was non-significant (RR 1.10, 95% CI 0.84 to 1.43).

Conversely, the Rockhampton 10,000 Steps Project conducted in a regional Australian community found an increase in the proportion of physically active females (achieving 150 minutes of activity in at least five separate sessions of the last week) but not males (Brown 2006). The interpretation of these findings are complicated as the control community was significantly more active then the comparison community at baseline (OR 0.77, 95% CI 0.65 to 0.93). At follow up, two years later, there was no longer a significant difference with the percentage of the comparison community categorised as being active decreasing by 6.4% while the intervention community increased 0.9%. Combined, there was once again no difference between the two populations (adjusted RR 1.18, 95% CI 0.60 to 2.35).

Unfortunately none of the other studies were found to be effective. The Isfahan Healthy Heart program aimed to improve the health

of a large population (> two million) through a multi-strategic, large scale intervention (Sarrafzadegan 2009). The adjusted RR of 1.06 (95% CI 0.99 to 1.14), suggests a small increase in the percentage of the population with greater than, or equal to, 30 minutes per day of moderate or vigorous activity; although this was not found to be statistically significant. This result also needs to be understood in the context of a decreasing trend in physical activity in both the intervention and comparison groups.

Wendel-Vos 2009 reported no effect in the percentage of participants meeting the target of 150 minutes per week and at least five sessions per week in the Maastricht region of the Netherlands, following a large five-year project aiming to improve individual's chronic disease risk factors (adjusted RR 0.97, 95% CI 0.10 to 0.93). Also targeting several health related behaviours, Kloek 2006 reported on an intervention targeting deprived neighbourhoods in Eindhoven, Netherlands. No effect was found on the proportion of the population attaining at least 30 minutes of moderate intensity physical activity on at least five days a week (adjusted RR 0.93, 95% CI 0.79 to 1.10).

In investigating a mass media dominated intervention aimed at increasing walking, Reger-Nash 2005 found no effect in moderate activity of at least 30 minutes for at least five days per week or in vigorous activity of at least 20 minutes for at least three days per week (adjusted RR 1.00, 95% CI 1.00 to 1.01).

NSW Health 2002 reported no statistically significant effects on physical activity, defined as those engaged in at least 150 minutes and five sessions of moderate activity or three sessions of vigorous activity per week, for a short intervention aimed at increasing the use of parks and walking. The calculated adjusted RR was 1.08 (95% CI 0.99 to 1.17) with the interpretation of this finding complicated by a decrease in physical activity attainment in both the intervention and the comparison communities. This is demonstrated with the risk difference (RD) for the intervention being -0.2.

A further study did report on the number of people in physical exercise, however a definition of physical exercise was unable to be obtained (Guo 2006). Given this, interpretation of the results of this study conducted in rural villages in China is difficult (and this study has not been included in Table 5). This is further complicated as the villages were not comparable at baseline for number of people in physical activity (34.6%, 95% CI 29.7 to 40.2; to 6.2%, 95% CI 12.2 to 20.8). The study did conclude there was a significant difference in change of 27% in the number of people in physical exercise between the intervention and control villages over the period of the study (P value not found).

Three studies reported the measure of leisure time physical activity (Kumpusalo 1996; Luepker 1994; Nishtar 2007) (Table 6). One of these studies, the Minnesota Heart Health Program, found some evidence of effectiveness although this was not consistent across the different sampling methods used in the study nor over the time span of data collection (Luepker 1994). The remaining two studies, one set across a large region in Pakistan (Nishtar 2007) and other in Finnish villages (Kumpusalo 1996) found no evidence of effect.

Luepker 1994 reported the findings of a large scale, high intensity, long term cardiovascular disease prevention intervention called the Minnesota Heart Health Program. In this study, six communities were matched, with one community of each pair non-randomly selected to receive this large scale, five to six-year intervention. Independent cross-sectional samples of 300 to 500 randomly selected adults were surveyed periodically, including multiple measurements during the 16-month baseline period and then at one, three, five and six years post-implementation. Concurrently, a cohort randomly selected from the pre-intervention cross-sectional surveys (n = 7097) were re-surveyed at zero, two, four and seven years post-intervention (end of study follow up 67.1%), although alternate halves of the cohort group were surveyed at two and four years. The authors presented the pooled data at the various measurement points adjusted for age, gender and education. They reported that the cross-sectional surveys found the intervention communities to have a significantly greater proportion of the population being physically active during leisure time at one and three years, with five and six years there no longer being a statistically significant difference despite trending higher (P values not provided). The cohort data found no significant differences at two and four years, however there was a statistically significant difference at seven years post-intervention (P values not provided). The adjusted RR calculated using data extracted from year zero and the final year of measurement was 1.11 (95% CI 0.94 to 1.30) for the cross-sectional data, and 1.08 (95% CI 0.97 to 1.20) for the cohort data respectively.

Nishtar 2007 reported on the Heartfile Lodhran CVD project aimed at cardiovascular disease prevention in Pakistan. The authors reported no change in leisure time physical activity (adjusted RR 0.84, 95% CI 0.70 to 1.02).

In a study set in Finnish villages (Finnish Healthy Village Study), Kumpusalo 1996 found that the intervention was not associated with improvements in physical activity patterns of people living in rural villages. The adjusted RR was 0.98 (95% CI 0.80 to 1.21).

An additional study reported on the effectiveness of an intense community intervention in Shandong, China for similar outcome of non-occupational physical activity (Zhang 2003). This study found no difference in the proportion of the intervention community found to be physically active between pre and post measurement ($p>0.05$), although over the same time there was a significant reduction in the proportion of the control community who were physically active ($P < 0.05$).

Five studies reported a dichotomous measure of sedentary activity or physical inactivity, that is the proportion of people who failed to attain a defined level of activity (Eaton 1999; Goodman 1995; Jenum 2006; Nafziger 2001; Osler 1993) (Table 7). We are currently seeking clarification of the results for one of the studies (Eaton 1999), which as such, will not be presented here at this stage. Of the remaining studies, the Romsas in motion study

showed some evidence that the three year, multi-strategic intervention was effective at decreasing the proportion of a population in a low socio-economic district in Oslo, Norway, not engaging in heavy physical activity (Jenum 2006). Nafziger 2001, Osler 1993 and Goodman 1995 all found the community wide interventions investigated not to be effective.

The Romsas in motion study was a controlled before and after study with a cohort follow-up panel (Jenum 2006). After a three-year follow up it reported that the percentage of respondents not achieving heavy physical activity making them sweat and feel out of breath was significantly smaller in the intervention population with a net reduction during the study period in favour of the intervention district of 8.1% (95% CI 2.4 to 13.8; P = 0.005). The adjusted RR was 0.8 (95% CI 0.59 to 1.08). As has been the case with other studies, these findings are complicated by the differences between the two communities at baseline. In this situation, the intervention community had a 5% higher baseline inactivity proportion as compared to the control community.

The Ostego-Schoharie health heart program targeted the prevention of cardiovascular disease in rural USA through a hospital based intervention. This study collected both cross sectional data and cohort data at baseline and at five-year follow up (Nafziger 2001). The cross-sectional data were reported as a non-significant reduction in self-reported sedentary lifestyle in the intervention population. Our analysis of the extracted results found an adjusted RR of 0.84 (95% CI 0.71 to 1.00). The cohort data also found no evidence of effect with both the intervention and control communities decreasing in the proportion found to be sedentary (P > 0.05).

The Osler 1993 study reported an increase in physical inactivity in both intervention and control communities of rural municipalities in Denmark. The calculated adjusted RR of 1.16 (95% CI 0.00 to 9517.54) suggested the intervention group was more physically inactive after the intervention as compared to the control group.

Goodman 1995 also found no difference between intervention and control groups for physical inactivity in a chronic disease prevention project in an urban US setting (adjusted RR 0.99, 95% CI 0.96 to 1.01).

Three studies reported leisure time physical inactivity (Kumpusalo 1996; Nishtar 2007; O'Loughlin 1999). None were found to demonstrate evidence of effectiveness.

Nishtar 2007 investigated an intervention aimed at increasing the physical activity levels in a large regional population in Pakistan. The investigators found no difference between the intervention and comparison population in recreation or leisure time physical inactivity (P values not reported). Similarly, Kumpusalo 1996 reported no difference in leisure time physical inactivity in the Finnish Healthy Village study (P > 0.05) and O'Loughlin 1999 found no difference in an intervention targeting a low income, inner city neighbourhood in Montreal, Canada (P = 0.063).

Two studies reported the attainment of vigorous activity (NSW Health 2002; Young 1996).

The Stanford five-city project, based in California, found inconsistent and limited intervention effects between intervention cities and control cities for behavioural measures of physical activity (Young 1996). In this study, independent cross-sectional surveys were conducted at baseline, 25, 51 and 73 months (n = 1800 to 2500 participants). Those who participated at baseline also comprised a cohort who were sampled at 17, 39 and 60 months (n = 907). The percentage of men who regularly engaged in at least one vigorous activity did significantly differ over time between the treatment and control cities (P < 0.004), although this was not found in the cohort sample (P = 0.068) nor in an independent (P = 0.237) or cohort sample of women (P = 0.842).

The NSW Health study also reported the per cent engaging in physical activity and found no effect between the intervention and treatment groups (P = 0.077) (NSW Health 2002).

Physical activity - continuous outcomes

Seven of the included studies reported continuous measures of physical activity.

Three studies reported leisure time physical activity measured by time (De Cocker 2007; Simon 2008; Wendel-Vos 2009) (Table 8), with each of the three studies showing some evidence of effectiveness.

Wendel-Vos 2009 reported on a regional cardiovascular disease prevention program in Limburg, Netherlands. Total leisure time physical activity was reported for both males and females. Both groups decreased their leisure time physical activity between baseline and follow up at five years, with no difference between the intervention and control groups for men. In women, however, the reduction in leisure time physical activity in the intervention group was significantly less then in the control group (P < 0.05).

Leisure time physical activity also decreased from baseline to follow up in both the intervention and control communities in the Ghent 10,000 steps study (De Cocker 2007). Importantly, this reduction was significantly greater in the control group than the intervention group (P $\leq$ 0.05) with the adjusted percentage change calculated as 25.60%. The authors reported that in addition to leisure time physical activity there were significant intervention effects for a range of physical activity outcomes including moderate physical activity (minutes per week) and work related physical activity (minutes per week); but not vigorous physical activity, transport-related physical activity and household physical activity.

Simon 2008 reported the results of a cluster randomised controlled trial of an intervention based predominantly in a school setting. It reported an adjusted change in supervised leisure time physical activity of 43% in adolescents, and an adjusted mean difference of 1.1 (95% CI 0.56 to 1.63) in leisure time physical activity at four years post-baseline. This is a statistically significant difference between the intervention and control groups (P < 0.0001).

Four studies reported a continuous measure of walking (Brownson 2004; Brownson 2005; De Cocker 2008; Wendel-Vos 2009) (

Table 9). Two of the studies (De Cocker 2007; Wendel-Vos 2009) reported some evidence of effectiveness although two conducted in the same population in Missouri, USA found no evidence of increased time spent walking (Brownson 2004; Brownson 2005). In an evaluation of a large, expensive, five-year intervention in a region in the Netherlands, Wendel-Vos 2009 reported a small increase in walking hours per week in males in the intervention group compared to a decrease in the comparison group (adjusted change 15.94%), however this was not found to be statistically significant (P > 0.05). Despite a reduction in walking hours per week in women from both groups, there was a larger reduction in the control community than the intervention community (adjusted change 29.41%), with the intervention group found to be statistically significantly different (or having less of a reduction) than the control community (P ≤ 0.05).

The Ghent 10,000 steps study reported a statistically significant increase in walking measured with a pedometer (steps/day) (P < 0.01) and self reported walking (minutes per week) (P < 0.01). The adjusted changes were 10.8% and 17.34% respectively (De Cocker 2007).

Two studies conducted in a rural area of Missouri reported measures of walking. Brownson 2004 found no difference between the communities in seven-day total walking (P = 0.91), and seven-day walking for exercise (P = 0.37). A later study reported on the mean rates of walking per week and found that the intervention and control communities were not statistically significantly different (P value not reported) (Brownson 2005).

Two studies reported continuous measures of energy expenditure (Kloek 2006; Sarrafzadegan 2009) (Table 10).

The Isfahan Healthy Heart program aimed to improve the health of a large population (> two million) through a multi-strategic, large scale intervention (Sarrafzadegan 2009). This study reported total daily physical activity as well as leisure time physical activity, expressed as metabolic equivalent of task (MET) in minutes per week. The MET is commonly used as a means of expressing the energy cost of physical activity as the ratio of the metabolic rate of any activity to the metabolic rate at rest. The total daily physical activity (MET-m/week) decreased in both the intervention and comparison areas over the three years of evaluation. This decrease was however significantly greater in the comparison area then the intervention area (-114 versus -68 MET minutes per week; P < 0.05). The intervention and control areas did both increase for leisure time physical activity (MET) with the difference at final evaluation being significantly different (P < 0.01) with an adjusted change of 12.26%.

Kloek 2006 reported on an intervention targeting deprived neighbourhoods in Eindhoven, Netherlands. It found no evidence of an increase in energy expenditure in the intervention group as compared to the comparison groups at two years post-baseline (P = 0.95).

More intense studies

Nine of the studies included in the review were classified as being of high intensity based upon the subjective assessment described in the methods section (Brown 2006; Eaton 1999; Gu 2006; Jiang 2008; Luepker 1994; Lupton 2003; Nafziger 2001; Wendel-Vos 2009; Zhang 2003).

Several of these studies reported some improved physical activity outcomes (Brown 2006; Jiang 2008; Luepker 1994; Lupton 2003; Zhang 2003), however this finding was inconsistent with several studies finding no effect (Eaton 1999; Nafziger 2001; Wendel-Vos 2009).

Higher quality studies

No studies were deemed to be high quality studies. Ten studies were assessed as having unclear risk of bias (Brownson 2005; Eaton 1999; Goodman 1995; Jiang 2008; Kloek 2006; Luepker 1994; Nafziger 2001; Nishtar 2007; Sarrafzadegan 2009; Simon 2008). Of the 10 studies, only three studies reported some evidence of effect (Jiang 2008; Luepker 1994; Simon 2008).

Equity pointers

The data extraction sought to identify studies which had conducted analyses of outcome measures by subgroups of socio-economic disadvantage such as income, education, occupation, ethnicity and other proxy measures of economic status. Brownson 2004 presented results stratified by whether respondents had a high school certificate or less, whether they had household incomes ≤ $20,000, or were African American respondents. In no instance was the net intervention effect statistically significant within these strata for the two outcomes measured in the study (seven-day total walking, seven-day walking for exercise). Wendel-Vos 2009 reported the outcomes of time spent in leisure time physical activity and walking (adjusted for age) stratified into low educational level (intermediate secondary education or less) and moderate or high educational level (higher secondary educational, and higher vocational education or university). In this analysis differences between the intervention and comparison communities were nullified except in walking hours per week in males where the intervention community stayed constant while the control community significantly decreased (P ≤ 0.05) over the period of the study (P ≤ 0.05). No other studies had analyses by socio-economic subgroups that we could identify, although a number of interventions were set or were targeted at areas of deprivation, disadvantage or low-socioeconomic status (Brownson 2004; Brownson 2005; Eaton 1999; Jenum 2006; Kloek 2006; Kumpusalo 1996; Lupton 2003; Nafziger 2001; O'Loughlin 1999; Reger-Nash 2005; Wendel-Vos 2009). Six of the included studies were also undertaken in low income countries (Gu 2006; Guo 2006; Jiang 2008; Nishtar 2007; Sarrafzadegan 2009; Zhang 2003).

Several studies did provide results analysed by gender (Brown 2006; Eaton 1999; Kumpusalo 1996; Lupton 2003; Wendel-Vos 2009; Young 1996). Eaton 1999 presented results grouped by age (> 35 and < 35 years) and by sex, with significant differences between age (P = 0.001) and sex (P = 0.001) being identified for physical inactivity. Over the course of the study, men under the age of 35 decreased physical activity significantly more than men

over 35 and women (both age groups), although there was no difference between the intervention and comparison cities. As has already been outlined above, time spent in leisure time physical activity and walking (adjusted for age and educational level) as reported by Wendel-Vos 2009 decreased in both the control and intervention communities over the period of the study, however there was significantly less reduction in the intervention community compared to the control community in females ($P \leq 0.05$) than in males ($P \geq 0.05$). Brown 2006 provided data on the proportion of the population of the intervention and control communities being physically active, for males and females. The investigators concluded that there was a different pattern between the sexes with the proportion of males in the intervention community categorised as being physically active decreasing by 4.2% (95% CI -10.1 to 1.7) compared to females where the proportion increased by 5% (95% CI -0.6 to 10.6). In a fishing village in Northern Norway, Lupton 2003 investigated the efficacy of a intervention aimed at improving the risk factor profile of the population. The proportion of males and females in the intervention group increased over the three year study as compared to the control population, however this was only statistically significant in the male population ($P = 0.047$). In the Stanford Five City Project, Young 1996 presented results of each of the intervention and control cities by men and women. Intervention effects of behavioural improvement were limited and not always consistent between intervention cities, however the percentage of men who regularly engaged in vigorous activity was significantly different over time between the intervention and comparison cities ($P < 0.004$) in the independent sample (there was also a cohort sample). Kumpusalo 1996 provided results analysed by male and female and for the villages from which the participants were from. No significant differences were found in any group between the baseline and follow-up measurements ($P > 0.05$).

Reach

To be an included study (see Types of participants) each intervention was required to show an intent to be comprehensive in reaching the targeted community. Although intent of reach was required, it was hypothesised using the logic model (Figure 1) that reach (both intended and actual) would differ between the studies and could affect the outcome. There is evidence from some process evaluations that in many community wide interventions not everyone is able to be reached. Goodman 1995 found that African Americans perceived the intervention explored in this study as 'upper class'. Further, there was evidence in the Brown 2006 study based in Rockhampton Australia that the intervention was less attractive to men, or that "It didn't speak to men", a finding that was borne out in the gender differential in the outcomes. Similar findings were also present in Wendel-Vos 2009. The approach of Simon 2008 was extremely limited in reach as it used 12-year olds as the target of the intervention and therefore was unlikely to penetrate much beyond the school community.

The absence of reporting by subgroups and process evaluation made the assessment of reach difficult for most studies. Furthermore, as reach is also a component of the assessment of intensity, it was not possible to undertake further interpretation due to the inconsistency of findings when overall intensity was assessed.

DISCUSSION

Summary of main results

We were unable to find any consistent evidence to support the effectiveness of multi-component community wide interventions to increase population levels of physical activity. There was considerable heterogeneity between intervention approaches, intensity of actions delivered, the outcomes assessed and comparison communities. The overall quality of the studies was poor with the majority assessed as having a high risk of bias. This was due to studies with no randomisation of control and comparator groups, the selection and retention of participants, and the use of non-validated outcome measures. No study was found to have a low risk of bias.

Overall completeness and applicability of evidence

Our review was able to draw upon studies across the globe, conducted in high and low income countries. We were also able to successfully obtain additional information and data from study authors. The review shows that the hypothesis that multi-component community wide interventions can effectively increase population levels of physical activity is not currently supported by the evidence. Although we found differences in the mix of intervention components deployed by included studies, one common approach was applicable across most studies. Almost all of the interventions included a component of building partnerships with local governments or NGOs (22 studies). Many also employed some form of individual counselling by health professionals (18 studies), mass media (15 studies) or other forms of communication (18 studies). Fewer studies worked in specific settings (11 studies) or used environmental change strategies (7 studies). Despite some common principles and approaches, of the 10 studies assessed as being of unclear risk of bias only three studies reported some evidence of effect. There is also the potential that publication bias exists in this body of research.

Quality of the evidence

The overall quality of studies was poor with none assessed as having a low risk of bias. This reflected the design of the studies as all were controlled before and after studies with the exception of one controlled interrupted time series (Luepker 1994), one cluster cohort study (O'Loughlin 1999), and one cluster randomised controlled trial (Simon 2008). Selection bias was a main concern as only one study was randomised. Many studies only had one measurement point pre-intervention and one post-intervention, and a number of the control groups had different baseline characteristics compared to the intervention groups. The other common problem related to detection bias as few studies reported the validity of their measurement tools. Validity of the measurement tools is particularly important given the small differences in physical activity reported by some studies. Many studies also relied on self reported physical activity measures as these are the most feasbile way of colecting data from a large population. They can however result in less precision and increase the variance in measures of behaviour. As intervention and control group participants completed the same self report measure, any misclassification is likely to be non-differential, leading to an attenuation of the effect of the intervention.

Potential biases in the review process

One limitation of this review is potential publication bias. Other studies may exist but have not been submitted or accepted for publication and therefore were not identified through our searching efforts. The likelihood of this is difficult to judge.

Our inclusion criteria required studies to have at least two intervention strategies and this excluded a number of large scale mass media interventions. It is possible that these mass media only studies may have included other strategies as part of their approaches but have not reported these activities formally. However, our objective to examine the effects of community interventions that deployed multiple strategies rather than a single strategy approach meant that without evidence of multiple strategies studies were excluded from our review.

Agreements and disagreements with other studies or reviews

One recent review by Yang 2010 reviewed the effectiveness of broad range of interventions to promote cycling. This review found small positive effects in two city level community intervention studies to promote cycling (Yang 2010). The English Cycle Demonstration Towns programme, published outside our search dates, reported increases in cycling across six towns between 2005 and 2008. Towns opted for different strategies to promote cycling, ranging from mass media campaigns, travel planning, cycle training services, and improvements to local cycling infrastructures. Yang 2010 also mirrored our findings in the conclusions of their review, as they were also limited by the quality of study design, measures and data analysis. This is a consistent finding with systematic reviews of physical activity interventions; that the limitations of study design and measures probably mask any possible effects of such interventions (Foster 2007; NICE 2008; Ogilvie 2007).

Kahn 2002 conducted systematic reviews of the effectiveness of a range of interventions intended to increase physical activity, including community wide campaigns. This review found that there was strong evidence that community wide campaigns are likely to be effective in increasing physical activity in the population, assuming that they are modified to target the populations in which they are implemented (Kahn 2002). The systematic review upon which these conclusions were based does not however include the latest studies (studies published since the year 2000) and six of the 10 studies that were included in the Kahn 2002 review (Jason 1991; Malmgren 1986; Meyer 1980; Owen 1987; Tudor-Smith 1998; Wimbush 1998) were excluded from our systematic review for reasons outlined in the excluded studies table (Characteristics of excluded studies).

AUTHORS' CONCLUSIONS

Implications for practice

Although numerous studies of community wide interventions have been undertaken, there is a noticeable inconsistency in the findings. The body of evidence in this review does not support the hypothesis that multi-component community wide interventions effectively increase population levels of physical activity. It could be postulated that, given the conflicting findings, community wide interventions lack efficacy, however we believe such a conclusion would be premature given the poor quality of studies. In particular, the tools used to measure physical activity were generally weak, inhibiting the ability to interpret the results and draw conclusions.

Assessment of heterogeneity by intervention intensity was attempted to determine if those studies of higher intensity, and therefore more likely to provide a sufficient dose and reach into a community, were able to bring about greater change as compared to interventions with low intensity. If it was found that a low dose intervention was indeed sufficient to increase a communities physical activity then this could have had very important implications for the development of community wide interventions by decision makers. Unfortunately the most intense interventions failed to demonstrate consistent improvements. Further, effectiveness was not demonstrated in the long term studies, which some shorter included studies had recommended. There was also no evidence that adherence to a particular theoretical framework or model is advantageous.

It is also worth considering the significant challenges of implementing multi-strategic community wide interventions in an attempt to reach the whole community. Some studies found gender differences in the effectiveness of the intervention. For example, Brownson 2004 found that men did not relate to the key message and as such the intervention failed to reach them. Conversely, other studies suggested greater effectiveness in the male population than the female population (Lupton 2003). These issues should be considered in the design and implementation of any community wide intervention.

Policy makers and health professionals need to consider the options they advocate for and the programs they fund because this review has not found evidence of effectiveness at a population level.

Implications for research

The central question of this research is whether it is worthwhile to develop and undertake multi-component interventions to increase population levels of physical activity. Based on the lack of robust studies and conflicting results to date, further exploration of combined community interventions is merited. The design of interventions may benefit from assessing the evidence from systematic reviews of individual strategies to guide which strategies should be included or excluded from the suite. There may also be scope for further studies focusing on outcomes by population characteristics such as social, gender or cultural groups; or targeting programmes at high risk groups.

One clear message is that any new studies should be rigorously designed and analysed, ensuring that the measures are reliable and sensitive to change at a population level. Design issues of particular importance in this field include the quality of the measurement of physical activity. Alternatives for self-report telephone surveys should be considered. It is disappointing that several of the included studies were intensive but relied on a singular low quality measure.

The assignment of communities as comparison or control communities should, where-ever possible, be through randomisation. Assignment to control for communities which have a lower level of capability to implement the intervention should be avoided. It would be advantageous to measure physical activity at multiple time points, prior to, during and after the intervention to consider the effect of the intervention against trends and regression to the mean.

It is also our recommendation that sample size calculation take account of clustering, completeness and duration of follow up, and that analysis accounts for clustering and for attrition. Researchers are also encouraged to conduct and publish process evaluations which provide valuable information on potential facilitators and barriers, and give an indication of how successfully an intervention has been implementated. Given the large investment in community wide interventions, assessment of resource consumption and economic evaluations are also warranted.

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Brown 2006

Methods	**Study design:** Controlled before and after study (independent samples) **Sampling frame:** Electronic database of telephone numbers **Sampling method:** Random **Collection method:** Computer assisted telephone interview **Ethics and informed consent:** Ethics approved, informed consent limited to the participation in the survey
Participants	**Communities:** Regional cities **Country:** Australia **Ages included in the assessment:** 18-60 **Reason provided for selection of the intervention community:** none stated, presumably location of the study centre and pre-existing partnerships **Intervention community:** City of Rockhampton (60 000) **Comparison community:** City of Mackay (75 000)
Interventions	**Name of the intervention:** 10,000 steps Rockhampton **Theory:** Social ecologic framework **Aim:** Evaluation of a whole community approach to improving population levels of physical activity **Community strategy development phase:** Yes **Description of costs and resources:** Provided (see below) **Components of the intervention as per the inclusion criteria**: #1 Social marketing - media campaign; # 2 Other communication strategies - including pedometers & logbooks, website advertising, local pharmacies, libraries, posters dog walking; #3 Individual counselling - promotion by health professionals (21 of 23 GP practices); #4 Partnering - specific settings, local activity task force with community organisations, government sport & recreation, business and media organisations; #5 Specific settings - workplaces and shopping malls; #6 Environmental change - "working with the the city council to improve local environment, creating repairing key footpaths, "10,000 steps" signage & maps **Emphasis of intervention:** Promotion physical activity **Information given on intensity:** Grant scheme of $100,000 Aus, plus in kind support. $20,000 spent on paid advertising and event marketing, $50,000 provided through in kind marketing contributions **Assessment of intensity:** High **Start date:** August 2001 **Duration**: 18 months
Outcomes	**Outcomes and Measures:** 1. Active (%). Measurement tool: Active Australia questionnaire **Time points:** Baseline 2001 & Follow-up 2003
Notes	Brown 2006 indicates that the "10,000 steps a day" did not appeal to men. Men were less likely than women to have used a pedometer (thus not appealing to middle-aged men)

Risk of bias

Item	Authors' judgement	Description

Brown 2006 (*Continued*)

Selection bias	Yes	Levels of PA different at beginning
Performance bias	Unclear	One third of control community had heard about the project. Intervention appears to have good integrity, however, one paper suggest that the message was not well received by males "it doesn't speak to me"
Attrition bias	No	No cohort study done - so no attrition
Detection bias	Yes	Low response rates. Samples not representative, 46.4% in 2001% survey; 47.3% in the 2003 survey (plus persons who could not be contacted because of no telephone)
Reporting bias	Yes	Not all of the measures are reported in the completed study that are presented in the Brown 2003 paper (e.g. METs). Summary only reported
Other	Unclear	Results are difficult to interpret and appear to be a regression to the mean of the state in which the intervention was undertaken. No sample size provided Intervention community is a university town
Overall bias	Yes	High Risk. 3 High risk categories

Brownson 2004

Methods	**Study design:** Controlled before and after study (independent samples) **Sampling frame:** Electronic telephone registry **Sampling method:** Random digit dialling **Collection method:** Telephone interviews **Ethics and informed consent:** Unclear
Participants	**Communities:** Rural communities **Country:** United States **Ages included in the assessment:** Adults **Reason provided for selection of the intervention community:** unclear **Intervention community:** 6 communities in Missouri **Comparison community:** 6 communities in Arkansas
Interventions	**Name of the intervention:** Bootheel heart health project **Theory:** Social ecological framework **Aim:** Increase physical activity / walking **Community strategy development phase:** Yes **Description of costs and resources:** none stated **Components of the intervention as per the inclusion criteria**: #2 Other communication - computer tailored newsletters and cards; #3 Individual counselling (unclear); #4 Partnering - working with volunteers (delivered by community volunteers via organised coalition); #6 Environmental change - walking trails, recognised lack of

	places to walk **Emphasis of intervention:** working with community organisations **Information given on intensity:** "moderate intervention" **Assessment of intensity:** medium **Start date:** December 2000 **Duration**: 2.5 years
Outcomes	**Outcomes and Measures:** 1. 7 day total walking for exercise per week 2. 7 day walking for exercise per week **Time points:** Baseline (December 2000 to May 2001) & Follow-up (June toAugust 2002)
Notes	

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Not randomised, no details of allocation. Unclear whether the communities where comparable at baseline (stated communities matched, but no details how "matched according to size, proportion of population African Americian, poverty levels"). Baseline comparison do not have statistical testing.The intervention community had 25 years of earlier work. It is difficult to ascertain which parts belong in the present intervention and thus it is impossible to determine the effect if the communities were reversed
Performance bias	Unclear	No statement of blinding of the communities. There is no statement pertaining to the avoidance of contamination; however the control communities are in a different state and there does not appear to be a mass-media component that could reach the control communities. The intervention was delivered to the targeted communities and no evidence of delivery to the control. The integrity of the intervention is unclear
Attrition bias	Yes	The outcomes are inconsistent. The follow-up included a higher percentage of African Americans (38.9% post vs. 31.5% baseline) suggesting the sampling is unstable
Detection bias	Yes	Assumed to use the measurement tool as intended and in entirety (BRFSS sampling method with self reported measure of walking and physical activity and trail use) . No details of blinding. It is unclear whether the outcome measures are reliable as they are self report with face validity only. Used report of physical activity over

		a week. The samples are not representative with significantly lower representation of males. No data is provided of the response rate. Selection was by random digit dialling
Reporting bias	No	The reports of the study appear to be free of selective outcome reporting as all the results shown are negative findings. The reporting is complete as the reporting is consistent with the ails of reducing the lack of physical activity
Other	Yes	Allocation is by community (cluster) and the analysis is aggregated with no adjustment. No sample size provided. There appears to be a "head start" with early work in the intervention community
Overall bias	Yes	High risk of bias. 3 High risk categories. Note that with the high risks which could positively influence the results, the findings are negative

Brownson 2005

Methods	**Study design:** Controlled before and after study (independent samples) **Sampling frame:** non-institutionalised individuals with a telephone **Sampling method:** random digit dialling **Collection method:** computer assisted telephone interviews **Ethics and informed consent:** no information
Participants	**Communities:** Rural communities in Missouri / Tennesee / Kansas USA. Compared to the rest of Missouri & the USA, this region had significantly more poverty, medically underserved, lower education levels. Death rates from chronic diseases (i.e. heart rate, stroke, cancer, diabetes) were significantly higher in the 5-county intervention area **Country:** United States **Ages included in the assessment:** adults **Reason provided for selection of the intervention community:** Both communities selected because of their demographic comparability **Intervention community:** 6 communities 6 in the intervention Missouri Ozark Region. **Comparison community:** 4 control in Tennessee & 2 Arkansas
Interventions	**Name of the intervention:** **Theory**: Ecological approach **Aim:** Increase physical activity **Community strategy development phase:** Yes **Description of costs and resources:** none stated **Components of the intervention as per the inclusion criteria**: #1 Social marketing - newspaper articles and media events; #2 Other communication strategies - enrolling people; #3 Individual counselling; #4 Partnering - based on community input - walking clubs, events, trail events **Emphasis of intervention:** Promoting walking, achieving moderate physical activity

	Information given on intensity: none stated **Assessment of intensity:** Medium **Start date:** 2003 **Duration**: 1 year
Outcomes	**Outcomes and Measures**: 1. Meeting recommendation for walking (%). Measurment tool: Behavoural risk factor surveillance system 2. Meeting recommendation for moderate PA (%). Measurment tool: Behavoural risk factor surveillance system 3. Mean rates of walking (min). Measurment tool: Behavoural risk factor surveillance system **Time points:** Baseline and follow up (12 months)
Notes	

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Not randomised. No details of allocation as to why the intervention communities were chosen. Comparison and intervention communities were matched according to size, race, ethnicity and proportion of the population living below the poverty level. However the intervention community had higher education than the control. Required participants to be living near a trail and may not be representative of the community. If the communities were reversed it is unclear what the effects would be as this project was an outgrowth of an earlier project
Performance bias	No	Communities were not blind. Measures were taken to prevent the control communities (unnamed) against contamination as they are in different states. The control communities were not provided with the intervention. There is no evidence to suggest that there are problems with the integrity of the intervention which is substantially described in a wide range of activities
Attrition bias	Unclear	Not possible to determine as no description whether the follow-up survey was undertaken as a cohort or as independent samples
Detection bias	Unclear	Measurement tools appeared to be applied as intended. No description whether the outcome assessment was blind. Physical activity questions were validated and reliable. Outcome measures quality acceptable as physical activity was measured for a period of a week. Sampling undertaken using random digit dialling. The baseline response rate = 65.2%; no details given for follow-up methods (independent or cohort) if the follow-up is *n*

		= 1531, 62.0% net response rate of completers is 40.4%. Uncertain of the effect of requiring proximity to a trail. "Eligable households were within a two-mile radius around an existing trail, which for most communities encompassed the entire town"
Reporting bias	No	No evidence of selective outcome reporting. Measures reported upon reflect the aims of the intervention
Other	Unclear	No issues of statistical quality. However claims of the presence of an effect are made by the authors which are not statistically significant. No details of a sample size calculation provided
Overall bias	Unclear	4 unclear categories.

De Cocker 2007

Methods	**Study design:** Controlled before and after study (cohort follow-up) **Sampling frame:** Population registries **Sampling method:** Random sample, 2500 from each city **Collection method:** Telephone survey & pedometer **Ethics and informed consent:** informed consent obtained for data collection
Participants	**Communities:** Urban population (cities) **Country:** Belgium **Ages included in the assessment:** 25-75 **Reason provided for selection of the intervention community:** Both cities selected because of their demographic comparability **Intervention community:** Ghent, capital city of East Flanders (22 800) **Comparison community:** Asalt, a city located 35km from Ghent (77 000)
Interventions	**Name of the intervention**: 10 000 steps Ghent **Theory**: Social ecologic approach **Aim**: Promotion of physical activity to adult population **Community strategy development phase:** Yes **Description of costs and resources:** none stated **Components of the intervention as per the inclusion criteria**: #1 Social marketing - mass media "Physical activity aimed at all adults"; #2 Other communication strategies - website; #4 Partnering - partnerships; #5 Specific settings - workplaces, #6 Environmental changes - signage. "This whole community intervention was designed to intervene at the individual (e.g. pedometer sale), social and environmental level." **Emphasis of intervention:** Multi-strategy **Information given on intensity:** none stated **Assessment of intensity:** Medium **Start date:** May 2005 **Duration:** 1 year

Outcomes	**Outcomes and Measures:** 1. Steps per day. Measurement tool: Pedometer. 2. Walking minutes per week. Measurement tool: International Physical Activity Questionnaire 3. Moderate physical activity minutes per week. Measurement tool: International Physical Activity Questionnaire 4. Vigorous physical activity minutes per week. Measurement tool: International Physical Activity Questionnaire 5. Work-related physical activity minutes per week. Measurement tool: International Physical Activity Questionnaire 6. Transport-related physical activity minutes per week. Measurement tool: International Physical Activity Questionnaire 7. Household physical activity minutes per week. Measurement tool: International Physical Activity Questionnaire 8. Leisure time physical activity minutes per week. Measurement tool: International Physical Activity Questionnaire **Time points:** Baseline and follow up (12 months)
Notes	

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Not randomised therefore not low. Reasonable comparability of the groups therefore not high. Unclear what the effect would be if the intervention and control communities were reversed
Performance bias	Unclear	No information of blinding of communities. No evidence of contamination. Not delivered in the control communities. Only 10% of the comparison community had heard of the intervention (compared to a much higher rate in Rockhampton 10000 steps)
Attrition bias	No	Attrition reasonable: Ghent = 24%; Aalst = 22% Incomplete data adequately addressed.
Detection bias	Yes	The status of blinding is unclear. Meaurement tools applied as intended using validated IPAQ. Quantity of physical activity = 1 week. Low response rate. Population: *n* = 2500 randomly selected. Response rate in Ghent =42%. Response rate Aalst = 41% - telephone and postal survey. Completed the follow-up survey Ghent 76%, Aalst 78%)
Reporting bias	No	No evidence of selective outcomes reporting or incompleteness of reporting
Other	No	No sample size calculation provided.

Overall bias	Yes	High risk of bias. High risk category in 1 and unclear in 2.

Eaton 1999

Methods	**Study design:** Controlled before and after study (independent samples) **Sampling frame:** Whole community **Sampling method:** Cross-sectional surveys of one person aged 18-64 from randomly selected households **Collection method:** examination **Ethics and informed consent:** Unclear
Participants	**Communities:** City **Country:** United States **Ages included in the assessment:** 18-64 **Reason provided for selection of the intervention community:** unclear **Intervention community:** City of Pawtucket (population 7529) **Comparison community:** Name of comparison city withheld (population 7732)
Interventions	**Name of the intervention**: Pawtucket Heart Health Program **Theory**: Social learning theory **Aim**: To reduce cardiovascular disease risk factors **Community strategy development phase:** Yes **Description of costs and resources:** none provided **Components of the intervention as per the inclusion criteria:** #2 Other communication strategies - self help materials; #4 Partnering - community organisations, walking club; #5 Specific settings - 27 public and private schools; #6 Enviromental change - fitness trails, lighted walking tracks **Emphasis of intervention:** Chronic disease risk factor reduction **Information given on intensity:** described as "intensive" **Assessment of intensity:** High **Start date:** 1982 **Duration:** 7 years
Outcomes	**Outcomes and measures:** 1. Sedentary (%). Measurement tool: Unnamed questionnaire 2. Knowledge that Physical activity prevents CVD (%). Measurement tool: Unnamed questionnaire 3. Attempted to increase physical activity (%). Measurement tool: Unnamed questionnaire **Time points:** Baseline (1982 & 1984), Peak intervention (1987 & 1991), Post intervention (1992 &1993)
Notes	

Risk of bias

Item	**Authors' judgement**	**Description**
Selection bias	Unclear	Non-randomised. Groups appear comparable at baseline although there is no statistical testing. Participants likely to be representative of the communities aimed at whole of community. >1000 participants

		for both intervention and comparison group for each survey. Response rates Intervention 70%, 67%, 68%, 65%, 68% Control 70%, 68%, 68%, 67%, 64%, 70%
Performance bias	No	Communities unblinded. Little risk of contamination given the community based emphasis of the intervention. No mass media component
Attrition bias	No	Independent samples, not applicable
Detection bias	Unclear	Physical activity question used in XS1 and XS2 not validated. Physical activity question used in XS4, XS5 and XS6 has been validated against measures of maximum oxygen consumption (r=0.6), and has a test-retest reliability of r=0.7. Measured over period of the week
Reporting bias	No	No indication of missing data in the reporting.
Other	Unclear	No sample size calculation provided.
Overall bias	Unclear	2 unclear, 3 low risk

Goodman 1995

Methods	**Study design:** Controlled before and after study (cohort follow-up) **Sampling frame:** Telephone directory and city directory for households **Sampling method:** Random **Collection method:** Questionnaire: telephone and non telephone **Ethics and informed consent:** No information given regarding ethical approval. Consent obtained for physical measurements
Participants	**Communities:** Urban city **Country:** United States **Ages included in the assessment:** >18 years of age **Reason provided for selection of the intervention community:** "selected first" **Intervention community:** City of Florence (population 56 240) **Comparison community:** City of Anderson (population 51 014)
Interventions	**Name of the intervention**: Heart to Heart Project **Theory**: Not explicitly stated **Aim**: Chronic disease prevention **Community strategy development phase:** Unclear **Description of costs and resources:** Received 2.2 million over 5 years run by local public health staff members in consultation from state health department and the CDC **Components of the intervention as per the inclusion criteria:** #1 Social marketing - through mass media; # 2 Other communication strategies - development of health promotion programs; #3 Individual counselling - through health providers; #4 Partnerships - working with other organisations; #5 Specific settings - churches, and with work places- "development of health promotion programs distributed to local work sites"; #6 Environmental

	changes - the development of walking trails throughout Florence **Emphasis of intervention:** Chronic disease prevention **Information given on intensity:** Not described **Assessment of intensity:** Low **Start date:** 1987 **Duration:** 5 years
Outcomes	**Outcomes and Measures**: 1. Physical inactivity (%). Measurement tool: Unnamed questionnaire **Time points:** Baseline (1987) and follow up (1991)
Notes	

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Non randomised, controlled before and after cohort with a matched community. Allocation unclear. The groups appeared to be comparable at baseline. Intervention community matched for population size and race, income, education and vital statistics, and by economic indicators. No statistical tests undertaken to determine if differences were significant. No reason to believe that the communities couldn't be reversed
Performance bias	Unclear	Blinding of the communities unknown. Measures were undertaken to protect against contamination. The two communities had different media markets (were as far apart in South Carolina as possible) and the intervention not delivered to the control. Potential problems with the integrity of the intervention as it appears not to be delivered as planned: "The evaluation showed that some of the items of the design did not match the actual projects delivered"
Attrition bias	No	Attrition rate for cohort from baseline to follow-up (5 years) was 29.3%
Detection bias	Unclear	No reason to believe measurement tools were not applied as intended. No indication that outcome assessor was blinded. Outcome measure metrics were validated "each survey question was evaluated as the the rationale, reliability, consistency and validity". Physically inactive was defined as engaging in no physical activity or exercise during the last month Individiuals sampled are likely to be representative. Samples were randomly drawn through random digit dialling. The response rates in 1987 were 83% with

Goodman 1995 (*Continued*)

		telephone and 94% without telephone. No difference between communities
Reporting bias	No	No evidence of selective outcome reporting or incompleteness of reporting. Measures reported match the aims
Other	Unclear	No other issues. Statistical quality acceptable. No sample size calculation for physical activity. No appearance of "head start" distinctive
Overall bias	Unclear	Unclear risk of bias (3 unclear)

Gu 2006

Methods	**Study design:** Controlled before and after study (cohort follow-up) **Sampling frame:** Regular residents **Sampling method:** Cross-section surveys of all residents **Collection method:** Questionnaire survey, physical examination and laboratory tests **Ethics and informed consent:** not stated
Participants	**Communities:** Rural villages **Country:** China **Ages included in the assessment:** 25 to 74 years **Reason provided for selection of the intervention community:** The two intervention villages were chosen for convenience **Intervention community:** Two villages in Jiaxing, Shejian Province (total population 2404) **Comparison community:** Control village. Not clear
Interventions	**Name of the intervention**: None provided **Theory**: None reported **Aim**: Risk factors for CVD including physical activity **Community strategy development phase:** Yes **Description of costs and resources:** None provided **Components of the intervention as per the inclusion criteria**: #2 Other communication strategies - using various kinds of media brochures, classes and information board; #3 Individual counselling - health professionals **Emphasis of intervention:** several strategies, but appears to involve individual counselling by health professionals. Also emphasis on mass media "propagansim" **Information given on intensity:** no information **Assessment of intensity:** High **Start date:** 1998 **Duration :** 5 years
Outcomes	**Outcomes and Measures**: 1. Non-occupational physical activity. Measurement tool: Unnamed questionnaire **Time points:** Baseline and follow up (5 years)
Notes	

Gu 2006 (*Continued*)

Risk of bias		
Item	**Authors' judgement**	**Description**
Selection bias	Unclear	Non randomised. No details for reason of allocation. The author stated that there was no significant difference in demographic characters without reporting detailed information. However, the prevalence of hypertension in intervention group was significantly higher at baseline
Performance bias	Unclear	No details of blinding. The control community was in a different village in a different town, assume using local knowledge there would be reasonable distance for no overlap.
Attrition bias	Yes	Stated that the two surveys were conducted with the same sample before and after intervention (5 years). The sample size in the second survey was about 30% smaller than at baseline. The authors did not report reasons and effects of this attrition
Detection bias	Yes	The tool to measure physical activity was a set of questions. No detailed information about validity and reliability. Questions pertain to a weeks period. Participants were all adults in a village. Not possible to determine whether the persons selected were representative of the population. Measured persons ages 25 to 74
Reporting bias	Yes	Results on physical activity were not reported although stated in the methods of the thesis. Personal communication confirmed the measurement both pre and post intervention. The reason provided for not reporting was that "PA was not considered to be the main outcome of this intervention." It is highly probable that the results for PA were of no difference or negative
Other	Unclear	No results about the intervention effects on physical activity were reported though measured. No mention of a sample size calculation. Further communication via email and telephone was rejected by the author
Overall bias	Yes	High risk of bias. 3 high risk categories.

Guo 2006

Methods	**Study design:** Controlled before and after study (independent samples) **Sampling frame:** all residents > 35 years old **Sampling method:** Convenience sample. **Collection method:** questionnaire survey (face to face interview) plus physical examination **Ethics and informed consent:** Ethics and informed consent unclear
Participants	**Communities:** Rural Villages **Country:** China **Ages included in the assessment:** 35 years and older **Reason provided for selection of the intervention community:** none stated **Intervention community:** Tam Mu Gang (unknown population) **Comparison community:** Nan Guan Cum (unknown population)
Interventions	**Aim**: To enhance public awareness regarding hypertension and to change unhealthy lifestyles and behaviours **Community strategy development phase:** Yes **Description of costs and resources: n**one provided **Components of the intervention as per the inclusion criteria**: Primarily health education to enhance awareness of hypertension health life style and behaviours. #1 Social marketing - mass media, including information boards for the whole community; #2 Other communication strategies - one brochure per household about healthy lifestyle; #3 Individual counselling - classes and seminars by health professionals (settings unspecified), Individual consultation to persons at high risk and to patients **Emphasis of intervention:** multiple strategies **Information given on intensity:** not given **Assessment of intensity:** Medium **Start date:** October 2004 **Duration:** 1 year
Outcomes	**Outcomes and Measures**: 1. Number of people involved in physical exercises. Measurement tool: Unnamed questionnaire **Time points:** Baseline and follow up (1year)
Notes	Intervention increased knowledge and awareness of hypertension treatment. Very brief reporting

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Not randomised and no details of the reasons for allocation. Stated that the two communities were comparable in terms of demographic characters, and prevalence of hypertension. The two communities were not adjacent. Comparisons were done after intervention with samples from these communities. However, it was not clear about the characters of populations and the methods to determine the samples. Unclear what the effects would be of reversing the communities

Guo 2006 (*Continued*)

Performance bias	No	No special measures were taken to prevent contamination. The control community was in a different village but it is unclear whether they were the same town, assume using local knowledge, they stated that there would be reasonable distance for no overlap. No interventions in control
Attrition bias	Unclear	Independent samples - Attrition n/a
Detection bias	Yes	Physical activity was measured using survey questions. No information about the source and validity. Representativeness unclear because no information about the populations and methods to draw the samples
Reporting bias	Unclear	Very brief reporting. Can not determine which measures were undertaken and which were reported
Other	Unclear	Data on PA were numbers only. No indication a sample size calculation was undertaken
Overall bias	Yes	High risk of bias. 2 high risk categories.

Jenum 2006

Methods	**Study design:** Controlled before and after study (cohort follow-up) **Sampling frame:** Whole community **Sampling method:** All individuals invited by letter **Collection method:** Survey **Ethics and informed consent:** Ethical review and informed consent obtained
Participants	**Communities:** Districts of Oslo **Country:** Norway **Ages included in the assessment:** 30-67 years **Reason provided for selection of the intervention community:** Highest mortality rates and most disadvantaged **Intervention community:** Romsas, a district of Oslo (population 6 700) **Comparison community:** Furuset, a neighbouring district in Oslo
Interventions	**Name of the intervention**: Romsas in motion **Theory**: Based on social-psychological and ecological models and perspectives of empowerment and participatory approaches **Aim**: Promoting physical activity **Community strategy development phase:** Yes **Description of costs and resources:** low cost **Components of the intervention as per the inclusion criteria**: 4 main strategies of 10 intervention components. #1 Social marketing - mass media communication to communicate information about physical activity & promote physical activity programs of the project; #2 Other communication strategies - various; #3 Individual counselling -GPs prescribed physical activity programs; #4 Partnering - participatory approaches of local health & welfare workers, incorporated in strategic plans of the community; #6 Environemental change - environmental approaches

Jenum 2006 (*Continued*)

	Emphasis of intervention: Difficult to tell: but appears to have an emphasis on #4 working with organisations **Information given on intensity:** none stated **Assessment of intensity:** Medium **Start date:** 2000 **Duration**: 3 years
Outcomes	**Outcomes and Meaures**: 1. Physically inactive (%). Measurement tool: Unnamed questionnaire 2. Change in physical activity (hours per week). Measurement tool: Unnamed questionnaire 3. Physically inactive (stages of change). Measurement tool: Unnamed questionnaire **Time points:** Baseline and follow up (3 years)
Notes	Participation in physical activity groups were more strongly related to forward transition in stages of changes in physical activity than others. Exposure and participation rates in the various interventions components varied greatly (1.5% to 92.7%)

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	The communities were not randomised.There is evidence that the groups are not comparable although not statistically significant (Intervention community, 12% less had full time work, 8% more were on disability pension, 5% more smoked, 4% more physically inactive). The Intervention community is the most disadvantaged in Oslo
Performance bias	Unclear	No indication of blinding. Some possibility of contamination with neighbouring district (e.g. mass media etc)
Attrition bias	Yes	Incomplete data not adequately addressed. Attrition from intervention 33.4% and control was 33%
Detection bias	Yes	Unclear whether the measurement tools were used as intended and in their entirety. No details of blinding of outcome assessors. Used "a specially designed questionnaire concerning physical activity". A summary document identifies the measure as the IPAQ a validated questionnaire reporting for 1 week. Of the 6140 invited subjects 2950 (48%) completed the survey; reporting outcomes only for those persons 30 to 67 years
Reporting bias	Yes	Likely, the baseline publication provides data of METS min per week for leisure time, however this is absent in the follow-up results with no explanation
Other	No	No sample size calculation undertaken, but whole of community sample

Jenum 2006 (*Continued*)

Overall bias	Yes	High risk of bias. Three high risk categories.

Jiang 2008

Methods	**Study design:** Controlled before and after study (independent samples) **Sampling frame:** Community aged 35-74 years **Sampling method:** Randomised cluster sampling **Collection method:** Face to face questionnaire survey and physical examination **Ethics and informed consent:** not stated
Participants	**Communities:** Urban communities in Beijing **Country:** China **Ages included in the assessment:** 35-74 **Reason provided for selection of the intervention community:** **Intervention community:** Chongwen community in Beijeng (population about 50 000) **Comparison community:** Xicheng community in Beijeng (population about 50 000)
Interventions	**Name of the intervention**: **Theory**: none stated **Aim**: Prevention and control of hypertension **Community strategy development phase:** Yes **Description of costs and resources:** none provided **Components of the intervention as per the inclusion criteria**: #2 Other communication strategies - handouts were distributed 4x a year going house to house, community information board 4X a year; #3 Individual counselling - Individual screening everyone (73% participation) and then counselling by health professionals for high risk factors; #4 Partnering -involved community councils comprising of primary health education and health promotion about healthy diet, increasing physical activity and less drinking **Emphasis of intervention:** Individual counselling **Information given on intensity:** not described **Assessment of intensity:** High **Start date:** 1997 **Duration**: 3 years
Outcomes	**Measures:** Regular exercise (singular simple question) **Time points:** Baseline (1997) & follow-up (2000)
Notes	Improvements observed in health knowledge, care about health. No change in other health outcomes measured

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Not randomised. Not details of reasons for allocation. Stated that the two communities were comparable in terms of population, economics and culture. The samples from these communities were comparable in terms of age and gender. There is nothing to suggest that the communities couldn't be reversed.

Jiang 2008 (*Continued*)

Performance bias	No	Communities not blinded. No special measures were taken to prevent contamination. The control community was in a different district and no interventions were provided to the control. Considering the communities were chosen from two districts of Beijing and the nature of the interventions (mass media, workshops, patient management etc.) and of the city of Beijing, it is unlikely contamination of the control group occurred. The integrity of the intervention is unclear.
Attrition bias	No	Independent samples - Attrition not applicable. The post intervention surveys were conducted in different samples from baseline but within the studied communities
Detection bias	Unclear	It is likely the tools were applied as intended and in their entirety. Physical activity was measured using individual questions without detailed information on their source and validity. No details of duration of PA. Representativeness is unclear. The two studied communities had 50,000 residents each. Surveys were done with randomised samples (839-962) from the communities before and after intervention
Reporting bias	No	Both positive and negative results were reported. The measures reported are the same as those described in the aims of the intervention
Other	Unclear	Allocation and analyses were done by community. The net changes after intervention were calculated and tested. No description of a sample size calculation
Overall bias	Unclear	Unclear risk of bias.

Kloek 2006

Methods	**Study design:** Controlled cluster before and after study (cohort follow-up) **Sampling frame:** Not identified **Sampling method:** Random sample. **Collection method:** postal questionnaire **Ethics and informed consent:** Medical ethical committee of Catharina Hospital. Informed consent unclear
Participants	**Communities:** Neighbourhoods in Eindhovern **Country:** Netherlands **Ages included in the assessment:** 18-65 years **Reason provided for selection of the intervention community:** based on health needs **Intervention community:** 3 deprived neighbourhoods (neighbourhood populations range from 1800-6700) **Comparison community:** 3 matched neighbourhoods (neighbourhood populations range from 1800-6700)

Interventions	**Name of the intervention**: Program "Wijkegezondheidswek" **Theory**: Transtheoretical model stages of change, attitude social influence - efficacy model **Aim**: Improve health related behaviour outcomes **Community strategy development phase:** Yes **Description of costs and resources:** none stated **Components of the intervention as per the inclusion criteria**: #1 Social marketing - mass media; #3 Individual counselling - provided face to face; #4 Partnering - working with coalitions - community; #5 Specific settings - special events held in schools **Emphasis of intervention:** Multiple strategies **Information given on intensity:** none given **Assessment of intensity:** Low **Start date:** 2000 / 2001 **Duration:** 2 years
Outcomes	**Outcomes and Meaures:** 1. Enough physical activity (%). Measurement tool: Short Questionnaire to Assess Health Enhancing Physical Activity (SQUASH) 2. Physical activity (METs/wk). Measurement tool: Short Questionnaire to Assess Health Enhancing Physical Activity (SQUASH) 3. Physical activity stages of change. Measurement tool: Unnamed questionnaire 4. Physical activity attitude score. Measurement tool: Unnamed questionnaire 5. Physical activity efficacy score. Measurement tool: Unnamed questionnaire **Time points:** Baseline (2000) and follow up (2002)
Notes	

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Non randomised. Groups appear to be comparable at baseline. Participants likely to be representative of the community. Both intervention and control equally deprived
Performance bias	No	Not much mass media, most intervention based on community/ Neighbourhoods/schools etc
Attrition bias	Unclear	cohort - attrition rate 31%
Detection bias	No	Validated questionnaire used.Unkown if assessors blinded. Participants likely to be representative of the community as random sample with response rate of 60%
Reporting bias	No	No evidence of reporting bias.
Other	Unclear	No statement of sample size calculation.

Overall bias	Unclear	Unclear risk of bias. 3 Unclear and 3 low risk categories.

Kumpusalo 1996

Methods	**Study design:** Controlled cluster before and after study (independent) **Sampling frame:** All residents of villages **Sampling method:** census **Collection method:** No information **Ethics and informed consent:** None described
Participants	**Communities:** Rural Villages **Country:** Finland **Ages included in the assessment:** 20 - 64 **Reason provided for selection of the intervention community:** unclear **Intervention community:** 4 villages, although only 2 qualify with both pre and post measurement. (populations between 220 and 490 inhabitants) **Comparison community:** 2 comparison communities
Interventions	**Name of the intervention**: Finnish Healthy Village Study **Theory**: standard health promotion principles of inter-sectorial collaboration **Aim**: Improve healthy lifestyles **Community strategy development phase:** No **Description of costs and resources:** described as "low cost" **Components of the intervention as per the inclusion criteria**: #2 Other communication strategies - booklets sent to every household, Village seminars once a month during Autum & Spring terms; #3 Individual counselling - "intensive advice given by local health nurses"; #4 Partnerning - clubs, red cross, hunting clubs etc, study group, sports groups , walking campaigns; #5 Specific settings -local adult education centres **Emphasis of intervention:** none identified **Information given on intensity:** none given **Assessment of intensity:** Medium **Start date:** 1986 **Duration**: 3 years
Outcomes	**Outcomes and Meaures**: 1. Physically active during leisure time (%). Measurement tool: Unnamed questionnaire 2. Physical inactive during leisure time (%). Measurement tool: Unnamed questionnaire **Time points:** Baseline and follow up (3 years)
Notes	

Risk of bias

Item	**Authors' judgement**	**Description**
Selection bias	Unclear	No description of reasons for allocation. Non randomised - quasi experimental. Can't tell if the communities are comparable at baseline as there is inadequate demographic data and inadequate statistical testing. Aims

Kumpusalo 1996 (*Continued*)

		to be inclusive of the community. Difficult to tell what the effects might be if the the control and community communities were reversed
Performance bias	Yes	No details of blinding of communities. Limited measures taken to protect against contamination as villages are quite close. Possibly some contamination as some of the intervention was delivered to the control "Due to ethical imperatives and the relatively short distances between the villages, some extra activities, such as walking tests, health seminars and personal feedback of the results of individual health examinations, were also organized in the control villages." Efforts made to ensure intervention integrity "During the program, a careful process evaluation was made.."
Attrition bias	Yes	Communities with both baseline data and follow-up data are included in the analysis in accordance to the inclusion criteria (those with outcome only data excluded) . Attrition 34% not adequately addressed
Detection bias	Unclear	Nothing otherwise to indicate that the measurement tools weren't used in their entirety. No indication of blinding. Questionnaires assessed for internal consistency and reliability only. No indication of any assessment of validity. Physical activity measured over one week (adequate duration). Representative, aimed for whole of village inclusion with response rates ranging from 88% to 55%
Reporting bias	No	No evidence of selective outcome reporting as outcomes in baseline publication are consistent with outcome publication. Measures reported are the same as those described in the aims of the intervention
Other	No	No statement of sample size calculation.
Overall bias	Yes	2 high risk of bias, 3 unclear.

Luepker 1994

Methods	**Study design:** Controlled before and after study (cohort follow-up and independent samples) **Sampling frame:** census blocks **Sampling method:** random selection of census blocks. Geographically adjacent groups of 5 households were randomly selected within those blocks **Collection method:** in person measurement **Ethics and informed consent:** No details of informed consent or ethical approval
Participants	**Communities:** Towns in the upper mid-west, Minnesota **Country:** United States **Ages included in the assessment:** 25-74 **Reason provided for selection of the intervention community:** unclear **Intervention community:** The towns of Mankato (population 37 812), Fargo-Moorhead (population 111 579) and Bloomington (population 81 831) **Comparison community:** The towns of Winona (population 25 075), Sioux Falls (81 831) and Roseville (population 74 731). These towns were matched for size of community, type of community, and distance from the Twin Cities
Interventions	**Name of the intervention**: Minnesota Heart Health Program **Theory**: Social learning theory; Persuasive communications theory and models for involvement of community leaders and institutions **Aim**: Cardiovascular disease prevention **Community strategy development phase:** Unclear **Description of costs and resources:** None described **Components of the intervention as per the inclusion criteria**: #1 Social marketing - through mass media; #2 Other communication strategies; 3) Individual counselling; 4) Partnering - working with sporting clubs etc; #5 Specifc settings - in workplace; 6) Environmental change **Emphasis of intervention:** Multi-level high intensity media campaign **Information given on intensity:** described as high intensity **Assessment of intensity:** High **Start date:** Baseline measurement for 16 months. Intervention commenced 1981 **Duration**: 5-6 years
Outcomes	**Outcomes and Meaures**: 1. Leisure time physical activity (%). Unnamed questionnaire 2. Physical activity score kcal/day. Home interview **Time points:** Baseline (for 3 years) and post intervention (years 1, 3, 5 and 6 (pooled comparison))
Notes	Smoking was measured and decreased in females only.

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Non randomised. Significant but small differences in groups for multiple characteristics. No suggestion that reversal of intervention and control communities would alter results

Luepker 1994 (*Continued*)

Performance bias	No	No indication communities were blinded. Paper suggests intervention delivered as intended. No evidence of contamination through as the communities were a significant distance apart
Attrition bias	No	Cohort study suffered acceptable attrition
Detection bias	Unclear	Blinding status of outcome assessors unknown. Leisure time physical activity was assessed as the percentage of participants who answered "yes" to the question "Are you regularly active in your leisure time?" Leupker cites two questionnaires for physical activity, however the validity of the work-time physical activity measure is not established. It seems unlikely this was used in full. Representativeness good. Cross sectional study had >100 participants in each survey, 300 -500 randomly selected adults sampled periodically (cross sectional). A baseline cohort was also followed. Response rates were high (>60%)
Reporting bias	No	Reports of the study appear to be free of selective reporting. Measures reported same as expected and match aims of the intervention
Other	No	Sample size calculation undertaken, but not described.
Overall bias	Unclear	Unclear risk of bias. This study used a better study design than most trials

Lupton 2003

Methods	**Study design:** Controlled before and after study (cohort follow-up) **Sampling frame:** All residents aged 20-62 **Sampling method:** A complete cohort of resident aged 40-62 was included, and a random sample of those aged 20-39 **Collection method:** Questionnaires and physical examination **Ethics and informed consent:** Ethical approval obtained. Informed consent unclear
Participants	**Communities:** Regional villages om the county of Finnmark (located in the Arctic region of Norway) **Country:** Norway **Ages included in the assessment:** 20-62 **Reason provided for selection of the intervention community:** "local initiative" **Intervention community:** The village of Batsfjord (population 2500) **Comparison community:** The villages of Loppa, Gamvik and Maoy (total population 5000)
Interventions	**Name of the intervention**: Finnmark Intervention Study **Theory**: community empowerment **Aim**: Change cardiovascular risk factors

	Community strategy development phase: Yes **Description of costs and resources:** none **Components of the intervention as per the inclusion criteria**: "Health and well being", Based on community empowerment. #1 Social marketing - through mass media; #3 Individual counselling - e.g. activity scripts; #4 Partnering - working with organisations; #5 Specifc settings - various **Emphasis of intervention:** Not stated however there appears to be an emphasis working with community organisations **Information given on intensity:** none provided **Assessment of intensity:** High **Start date:** 1987 **Duration**: 3 years
Outcomes	**Outcomes and Measures:** 1. Physically active (%). Measures reported: Unnamed questionnaire **Time points:** Baseline (1987) and follow up (1993)
Notes	Changes in blood pressure and BMI observed.

Risk of bias

Item	Authors' judgement	Description
Selection bias	Yes	Non-randomised, groups comparable at baseline but communities chosen based on local initiative
Performance bias	Yes	The local newspaper was distributed to one of the control communities. The radio station also covered the control communities so some contamination of multimedia component of intervention likely
Attrition bias	Unclear	Attrition unclear, limited data on drop outs
Detection bias	Unclear	Unclear of whether physical activity measurement was validated Participants likely to be representative of the community. In 1987 survey all residents aged 40 - 62; and a 15% random sample of residents aged 20 -39 invited: 2435 total in the four communities; In 1993, 1957 residents still alive were re-invited: follow up of 68% 1, 324 total persons
Reporting bias	No	No evidence of selective outcomes reporting or incompleteness of reporting
Other	Unclear	Head start: community instigated intervention. Unclear if study was adequately powered
Overall bias	Yes	High risk of bias. 2 high risk categories.

Nafziger 2001

Methods	**Study design:** Controlled before and after study (cohort follow-up and independent samples) **Sampling frame:** All inhabitants **Sampling method:** 3 stage cluster sample **Collection method:** telephone and clinic surveys **Ethics and informed consent:** yes
Participants	**Communities:** Counties, Northern New York State **Country:** United States **Ages included in the assessment:** 20-69 **Reason provided for selection of the intervention community:** unclear **Intervention community:** Otesgo and Scholarie counties **Comparison community:** Herkimer county
Interventions	**Name of the intervention**: Ostego-Schoharie Healthy Heart Program **Theory**: none stated **Aim**: Provide health education to isolated villages and populations. to increase physical activity, decrease smoking and improve nutrition and identify hypercholestaeremia and hypertension **Community strategy development phase:** Yes **Description of costs and resources:** 6 staff **Components of the intervention as per the inclusion criteria**: #1 Social marketing - through mass media; #2 Other communication; #4 Partnering - working with organisations; #5 Specific settings **Emphasis of intervention:** Health education with a strong mass media emphasis. **Information given on intensity:** "small staff", extensive volunteers" **Assessment of intensity:** High **Start date:** 1989 **Duration:** 5 years
Outcomes	**Outcomes and Measures**: 1. Sedentary % (self report). Measurement tool: CDC Behavioural Risk factor Survey **Time points:** Baseline (1989) and follow up (1995)
Notes	Smoking decreased in the intervention group.

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Non-randomised, but no significant difference between reference and intervention counties. The reason for allocation is unclear. Nothing to indicate the communities couldn't be reversed
Performance bias	No	Comparison community is geographically and culturally isolated with different sources of newspaper, radio and television information. Little risk of contamination. No evidence of any issues with integrity of the intervention
Attrition bias	No	Attrition in cohort 16.2%, acceptable.

Detection bias	Unclear	Measurement tools were likely to be applied as intended. Questionnaire not validated (single question). Sedentary activity was measured over 1 week. Representativeness: Baseline response rate = 61.8%, 5 year panel = 83.8%, 5 year cross sectional = 45%
Reporting bias	Unclear	No evidence of selective outcome reporting or incompleteness of reporting
Other	No	None
Overall bias	Unclear	Unclear risk of bias. 3 unclear categories.

Nishtar 2007

Methods	**Study design:** Controlled before and after study (independent samples) **Sampling frame:** Entire populations of the districts **Sampling method:** Multi-stage clustering sampling **Collection method:** Survey **Ethics and informed consent:** Ethics unknown. Informed consent obtained from the respondent before each interview
Participants	**Communities:** Districts **Country:** Pakistan **Ages included in the assessment:** 18-65 years **Reason provided for selection of the intervention community:** None stated **Intervention community:** Lodhran (population 1.17 million) **Comparison community:** Rahin Yar Khan (population similar to Lodhran)
Interventions	**Name of the intervention**: The Heartfile Lodhran CVD prevention project **Theory**: None stated **Aim**: Cardiovascular disease preventions **Community strategy development phase:** No **Implementation phase:** Unclear **Description of costs and resources:** none provided **Components of the intervention as per the inclusion criteria**: #1 Social marketing - mass media Message of CVD prevention - risk factors; #3 Individual counselling - training of health professionals; #4 Partnering - community health education **Emphasis of intervention:** unclear - health knowledge **Information given on intensity:** none provided **Assessment of intensity:** Low **Start date:** 2000 **Duration**: 3 years
Outcomes	**Outcomes and Measures**: 1. Physical activity work domain (3 categories). Measurement tool: Global Physical Activity Questionnaire instrument 2. Physical activity during transportation. Measurement tool: Global Physical Activity Questionnaire instrument

	3. Physical activity during recreation/leisure. Measurement tool: Global Physical Activity Questionnaire instrument 4. Opinion about regular physical activity. Measurement tool: BRFSS questionnaire and Heartfile methodology **Time points:** Baseline (2000) and follow up (2003)
Notes	Some improvement observed for consumption of vegetables only

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Non randomised. No details of allocation. Unclear whether comparable at baseline as Control group had a greater number of those with the lowest monthly income. Difficult to tell whether outcomes would be the same if the Interverntion and Control communities were reversed
Performance bias	No	Blinding of participants unknown. No evidence of contamination, comparator 160km away. Adequate description of delivery implementation
Attrition bias	No	No evidence of incomplete data adequately addressed, cross-sectional independent samples
Detection bias	No	Questionnaire used GPAQ STEPS module to measure physical activity. Measurement tools applied as intended. Blinding status of outcome assessors unknown. Validated measure used. Adequate representativeness of samples of the communities through multistage cluster sampling. First stage random sampling. Second stage "systematic sampling" to select households. Response rate to the baseline survey was 100% in the control, and similar in the intervention group
Reporting bias	No	Report seems free of selective outcome reporting and match the aims of the intervention. No evidence of incomplete reporting
Other	Unclear	Statistical methods acceptable. Nothing apparently distinctive of the intervention community to explain outcome
Overall bias	Unclear	Unclear risk of bias attributed to uncertainty of selection bias

NSW Health 2002

Methods	**Study design:** Controlled before and after study (independent) **Sampling frame:** Electronic telephone registry (white pages) **Sampling method:** Random selection **Collection method:** Computer assisted telephone interview **Ethics and informed consent:** Not stated
Participants	**Communities:** Urban Suburbs (wards) **Country:** Australia **Ages included in the assessment:** 25 - 65 years **Reason provided for selection of the intervention community:** unclear **Intervention community:** Lachlan Macquarie ward **Comparison community:** Caroline Chisholm ward
Interventions	**Name of the intervention**: Walk It: Active Parks **Theory**: not stated **Aim**: To increase physical activity in moderate physical activity in adults aged 25-65 years **Community strategy development phase:** No **Description of costs and resources:** **Components of the intervention as per the inclusion criteria**: #1 Social marketing - through mass media; # 2 Other communication strategies - various; #4 Partnering - working with voluntary groups; #6 Environmental changes - working with the council for local park improvement **Emphasis of intervention:** Environmental interventions **Information given on intensity:** No details **Assessment of intensity:** Low **Start date:** 1997 **Duration:** 1 year
Outcomes	**Measures**: 1. Walking (any/ for exercise or recreation / other reasons) (%). Measurement tool: Questionnaire 2. Vigorous exercise (%). Measurement tool: Questionnaire 3. Light to moderate physical activity (%). Measurement tool: Questionnaire 4. Adequate activity (%). Measurement tool: Questionnaire 5. Awareness. Measurement tool: Questionnaire **Time points:** Baseline and follow up (12months)
Notes	

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	No details of allocation sequence. Not randomised. No details of allocation concealment. The publications fails to provide the details of the demographics of the populations to make comparisons "Caroline Chisholm ward selected as the control as it matched closely to the intervention." Can't tell what the effects would be if the control and intervention communities were reversed

NSW Health 2002 (*Continued*)

Performance bias	Yes	No details of blinding. Some efforts to protect against contamination. "Two other wards separated the study wards, creating a spatial barrier". The control ward was exposed to some of the promotion campaign, and park modifications were not completed as planned. One control park received a major improvement during the program, low response rate to the survey - no definite conclusions can be drawn. The intervention lacks integrity. "Due to problems in the implementation of the study interventions it was not possible to evaluate their effectiveness in increasing participation in physical activity (objective 1)."
Attrition bias	Unclear	Uncertain whether incomplete data was adequately addressed. State independent samples, but unclear whether cross-sectional, some of the questions incomplete
Detection bias	Yes	Measures were used in their entirety. Unclear whether outcome assessment was blind. Unclear of the validity of the outcome metrics. No description of validated survey, just used previous survey questions. Period of outcome measurement adequate comprising of participation in physical activity in the past 2 weeks: (1) Walking for exercise / recreation, (2) Walking for other reasons, (3) vigorous exercise, (4) light to moderate physical activity. Results not representative: No: response rate is 20%. Significant risk of bias
Reporting bias	No	Reports are free from selective reporting (survey was attached to the published report). The reporting does note seem complete, outcome measures do not report on the message of 30 minutes of walking most days
Other	No	None. Sample size calculation undertaken.
Overall bias	Yes	High risk of bias. 2 high risk of bias categories.

O'Loughlin 1999

Methods	**Study design:** Controlled before and after study (cohort follow-up and independent samples) **Sampling frame:** Electronic telephone registry **Sampling method:** Random sample, or neighbourhood cluster design random selection **Collection method:** Telephone survey **Ethics and informed consent:** None stated

O'Loughlin 1999 (*Continued*)

Participants	**Communities:** Inner-city neighbourhoods of Montreal **Country:** Canada **Ages included in the assessment:** 18 - 65 years **Reason provided for selection of the intervention community:** Disadvantaged, but unclear **Intervention community:** Neighbourhood of St Henri (population 25 000) **Comparison community:** Neighbourhood of Centre-Sud
Interventions	**Name of the intervention**: Coeur en santé St-Henri **Theory**: Bandura social learning theory and behavioural change theory of self efficacy **Aim**: Heart disease prevention, risk factors including physical activity **Community strategy development phase:** Yes **Description of costs and resources:** 5 year budget of $775 000. **Components of the intervention as per the inclusion criteria**: #1 Social marketing - minimal, through mass media (Column in local press); #2 Other communication strategies - direct mailing of print education 12,789 household directly mailed, Video cassette; #3 Individual counselling - screening for CV risk factors and advice through heart health fairs; #4 Partnering - walking clubs; #6 Environmental changes - minimal environmental changes applicable to physical activity **Emphasis of intervention:** not identified **Information given on intensity:** "did not have a large budget" **Assessment of intensity:** Medium **Start date:** 1992 **Duration**: 5 years
Outcomes	**Outcomes and Measures:** 1. Leisure time physical activity infrequency (%). Measurement tools: Canadian heart health survey 2. Self-rated physical activity (%). Measurement tools: Canadian heart health survey **Time points:** Baseline (1992) and follow up (1997)
Notes	No changes observed in health behaviours or health status measures

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Non-randomised before and after (independent 3-year, and cohort 5-year). Allocation not described. Some differences in characteristics of population but unclear of impact. Aimed at adults. Nothing to suggest reversal of control and interventions communities to have an impact upon outcomes both disadvantaged communities in Montreal
Performance bias	No	Blinding of participants unknown. Measures taken to avoid contamination as non adjoining. Minimal contamination evident and intervention only delivered to the one community. 13.1% of control community had heard of program, but only 0.9% had participated in 1 or more of its activities. Nothing to suggest the inter-

O'Loughlin 1999 (*Continued*)

		vention wasn't delivered as planned
Attrition bias	Yes	Attrition for the cohort study was 50%.
Detection bias	Unclear	Measures appeared to be applied as intended. No evidence of blinding. The validity and reliability of the instruments unclear. Representativeness possible as random sampling from telephone directory, however there is concern because the intervention and control communities are disadvantaged with 85% - 90% of coverage and 10 -15% of persons with confidential telephone numbers. 79.3% and 77.8% completed the interview
Reporting bias	No	No suggestion of selective outcome reported. The measures reported appear the same as the aims of the intervention although details are limited
Other	No	No issues of statistical quality. No details of a sample size calculation undertaken
Overall bias	Yes	High risk of bias. 1 significant high risk category.

Osler 1993

Methods	**Study design:** Controlled before and after study (independent samples) **Sampling frame:** Central persons registry **Sampling method:** Random sample **Collection method:** Postal survey **Ethics and informed consent:** Unclear
Participants	**Communities:** Rural municipalities **Country:** Denmark **Ages included in the assessment:** 20-65 years **Reason provided for selection of the intervention community:** Unclear **Intervention community:** Slangerup (population 8 000) **Comparison community:** Helsinge (population comparable)
Interventions	**Name of the intervention**: Slangerup - a heart-healthy town **Theory**: Social learning theory; Persuasion model **Aim**: Prevention of cardiovascular disease **Community strategy development phase:** Unclear **Description of costs and resources:** $50,000 ($ 6 per person) **Components of the intervention as per the inclusion criteria**: #1 Social marketing - mass media; #3 Individual counselling; #4 Partnering - working with voluntary organisations(community organisation) with education. General statement of the intervention: "the project almost ended up being a pure mass-media campaign, which experience shows may increase awareness, but as experience shows has little effect on adaption of new behaviour" **Emphasis of intervention:** Intention for the emphasis to be mass media, as well as involvement of the local population, however it ended up being purely mass-media

Osler 1993 (*Continued*)

	Information given on intensity: "Low cost" **Assessment of intensity:** Low **Start date:** 1989 **Duration:** 1 year
Outcomes	**Outcomes and Measures:** 1. Physically inactive (%). Measurement tool: Unnamed questionnaire 2. Stages of change - Considered doing more exercise. Measurement tool: Unnamed questionnaire **Time points:** Baseline (Oct 1989) and follow up (Oct 1990)
Notes	No changes in smoking and fat consumption measures

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Not randomisation, but reported characteristics similar
Performance bias	Yes	Lack of blinding, absence of detail to protect contamination
Attrition bias	Unclear	Independent samples, but response rates vary by ages
Detection bias	Yes	No details of the measurement tool, very low response rate
Reporting bias	No	Limited description
Other	Unclear	No details of sample size calculation undertaken
Overall bias	Yes	High risk of bias. 2 high risk categories.

Reger-Nash 2005

Methods	**Study design:** Controlled before and after study (cohort follow-up) **Sampling frame:** electronic telephone registry **Sampling method:** Random digit dialling **Collection method:** Telephone survey **Ethics and informed consent:** Ethics approval, but unclear if consent obtained
Participants	**Communities:** Cities in West Virginia **Country:** United States **Ages included in the assessment:** 50 - 65 **Reason provided for selection of the intervention community:** proximity to the university **Intervention community:** Wheeling, West Virginia (population 31 240) **Comparison community:** Parkersburg, West Virginia

Reger-Nash 2005 (*Continued*)

Interventions	**Name of the intervention**: Wheeling walks **Theory**: Theory of Planned Behaviour and Transtheoretical model **Aim**: Increase physical activity **Community strategy development phase:** Yes **Description of costs and resources:** 12 weeks of participatory planning. Purchase of 5,104 television gross points and 3,461 radio gross rating points, local TV adds, 14 quarter newspaper adds media relations with 170 stories. Plus booster of 521 TV points, 370 radio points, 2 quarter page newspaper. Details of staffing not provided. Paid advertising about $300,000 **Components of the intervention as per the inclusion criteria**: #1 Social marketing -paid mass media; #2 Other communication strategies - public relations activities, campaign website, #3 Individual counselling - physicians "prescriptions for walking"; #4 Partnering - working with organisations; #5 Specific settings - work places **Emphasis of intervention:** Mass media intensive ("a community campaign using paid media to encourage walking among sedentary older adults") **Information given on intensity:** none provided **Assessment of intensity:** Medium **Start date:** April 2002 **Duration**: 12 months
Outcomes	**Measures**: 1. Sufficiently active (moderate/vigorous). Measurement tool: BRFSS questions 2. Sufficently active walker (%). Measurement tool: BRFSS questions 3. Change in minutes. Measurement tool: BRFSS questions 4, Change in walking per day. Measurement tool: BRFSS questions 5. Change in walking minutes per week. Measurement tool: BRFSS questions 6. Change in minutes of mod to vigorous physical activity per week. Measurement tool: BRFSS questions **Time points:** Baseline and follow up (3 months; 6 months; 12 months)
Notes	

Risk of bias

Item	Authors' judgement	Description
Selection bias	Yes	Not randomised. Intervention community chosen based on proximity to university. Baseline characteristics of intervention and control group mostly comparable however full time employed much higher in wheeling. Wheeling is a university town so may be an effect modifier
Performance bias	No	No evidence of blinding; No evidence of contamination. Mass media of control community unknown. Appears to have adequate distance between the town. No issues identified in the integrity of the intervention
Attrition bias	Unclear	Attrition rate >30% for Wave 3 and 4.

Reger-Nash 2005 (*Continued*)

Detection bias	Yes	Unclear whether the measurement tools applied as intended and in their entirety. Unclear whether assessment blinded. Quality of physical activity >1 day. Sample only included 50-65 year olds randomly recruited; response rate not given
Reporting bias	No	No evidence of selective outcome reporting
Other	Unclear	Sample size calculation was undertaken
Overall bias	Yes	High risk of bias. 2 high risk categories.

Sarrafzadegan 2009

Methods	**Study design:** Controlled before and after study (independent samples) **Sampling frame:** whole population **Sampling method:** multi-stage clustering **Collection method:** not stated **Ethics and informed consent:** Ethical approval obtained. Informed written consent provided by each participant in the assessment
Participants	**Communities:** Cities **Country:** Republic of Iran **Ages included in the assessment:** Stated as "adults" **Reason provided for selection of the intervention community:** None stated **Intervention community:** Isfahan (population 1 895 856) and Najaf-Abad (275 084) **Comparison community:** Arak (population 668 531)
Interventions	**Name of the intervention**: Isfahan Healthy Heart Program **Theory**: not stated **Aim**: Cardiovascular disease prevention and control of non-communicable disease **Community strategy development phase:** Yes **Description of costs and resources: Insuffient details** **Components of the intervention as per the inclusion criteria**: #1 Social marketing - "public education throughout the mass media; #3 Individual counselling; #4 Partnering - working with special organisations **Emphasis of intervention:** community engagement **Information given on intensity:** "comprehensive, integrated" **Assessment of intensity:** Medium **Start date:** 2000 **Duration:** 4 years
Outcomes	**Measures:** 1. Individuals with greater than or equal to 30 minutes per day of moderate or vigorous activity (%). Measurement tool: STEPwise approach to chronic disease risk factor surveillance (STEPS) 2. Leisure time physical activity (MET-m/week). Measurement tool: STEPwise approach to chronic disease risk factor surveillance (STEPS) 3. Total daily physical activity (MET-m.week). Measurement tool: STEPwise approach to chronic disease risk factor surveillance (STEPS)

Sarrafzadegan 2009 (*Continued*)

	Time points: Baseline and follow up (1 year, 2 year, 3 year, 4 year)
Notes	Improvements in the outcomes of smoking and diet

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Quasi experimental controlled before and after study not randomised. The 2 intervention communities resembled the control community in its socioeconomic, demographic and health profile except control group had a much higher percentage of rural living people. Nothing to suggest the outcomes would be different if the communities were reversed
Performance bias	No	Comparison community did not receive intervention - unlikely risk of contamination
Attrition bias	No	Status of incomplete data unknown. Attrition n/a sampling independent samples
Detection bias	No	Physical activity measured using validated Baecke questionnaire of regular physical activity. Assumed to use questionnaire in the entirety. Time period not specified. Sampling likely to be representative. A random sample of adults selected yearly by multi-stage cluster sampling. Response rate very high (98-100%)
Reporting bias	No	No evidence of selective reporting bias or incompleteness of reporting
Other	Unclear	None. Sample size calculation undertaken, but no details provided
Overall bias	Unclear	Unclear risk of bias. No high risk category, 2 unclear categories

Simon 2008

Methods	**Study design:** Cluster randomised controlled trial **Sampling frame:** 12 year adolescents (first level in public middle schools) **Sampling method:** All of the sampling frame were included **Collection method:** Survey **Ethics and informed consent:** Ethical approval obtained and informed consent obtained at 3 levels

Participants	**Communities:** Schools in four school catchment defined communities in Bas-Rhin of Eastern France **Country:** France **Ages included in the assessment:** 11/12 year olds (at baseline) **Reason provided for selection of the intervention community:** not applicable- random assignment **Intervention community:** Public middle schools **Comparison community:** Public middle schools
Interventions	**Name of the intervention**: Intervention centred on adolescents' physical activity and sedentary behaviour **Theory**: ecological models **Aim**: Prevention of overweight through physical activity **Community strategy development phase:** No **Description of costs and resources:** Costs concerned mainly the coordination of the different partners by the ICAPS team and the supervision of the activities provided **Components of the intervention as per the inclusion criteria**: #4 Partnering - home, community/neighbourhood/recreation fitness / sports facilities; #5 Specific settings - schools; #6 Environmental changes - various **Emphasis of intervention:** Working in schools setting (with reach to homes) with some environmental strategies **Information given on intensity:** not stated **Assessment of intensity:** Low **Start date:** 2002 **Duration:** 4 years
Outcomes	**Measures:** 1. Supervised leisure physical activity (hrs/wk). Measurement tool: modifiable activity questionnaire for adolescents 2. Active commuting between home and school (minutes/day). Measurement tool: modifiable activity questionnaire for adolescents 3. Intention towards physical activity score. Measurement tool: modifiable activity questionnaire for adolescents **Time points:** Baseline, and follow up (1 year, 2 year, 3 year, 4 year)
Notes	Improvement in BMI only for those children initially non-overweight

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Cluster randomisation, method of randomisation is not described
Performance bias	Yes	Implementation. The intervention delivered primarily from middle schools with to those in the first year. Schools are public, unknown what percentage of the community children are in private schools
Attrition bias	No	
Detection bias	Yes	The sampling uses the children in 6th grade of public schools exclusively for the outcomes. The outcomes of other children and residents in the community are un-

Simon 2008 (*Continued*)

		known,
Reporting bias	No	
Overall bias	Yes	High risk. 2 high risk categories.

Wendel-Vos 2009

Methods	**Study design:** Controlled before and after study (independent samples and cohort follow-up) **Sampling frame:** Population registries **Sampling method:** Stratified random sample **Collection method:** Questionnaire and physical examination **Ethics and informed consent:** Dutch medical ethics committee TNO provided approval. All participant gave informed consent
Participants	**Communities:** Cities **Country:** Netherlands **Ages included in the assessment:** 14 years and older **Reason provided for selection of the intervention community:** Unclear, seems likely related to study centre location **Intervention community:** Maastricht (population 185 000) **Comparison community:** Doestiche (population comparable to Maastricht)
Interventions	**Name of the intervention**: Hartslag Limburg **Theory**: Multi-stage conceptual framework **Aim**: Improvement of lifestyle factors: (energy intake, fat intake, time spent on leisure-time physical activity (of walking, bicycling and sports), and smoking **Community strategy development phase:** Yes **Description of costs and resources:** Total program costs of the program was 809, 650 Euro; of which 555,148 Euro was spent on exercise. Total cost of 5 year was 900,000 Euro, 86,000E start-up costs **Components of the intervention as per the inclusion criteria**: #1 Social marketing - mass media; #2 Other communication strategies - printed guides showing walking and cycling routes including schedule; #4 Partnering - working with organisations to encourage walking; #5 Specific settings - schools **Emphasis of intervention:** Community participation **Information given on intensity:** 790 interventions over 4 years **Assessment of intensity:** High **Start date:** 1999 **Duration:** 4 years
Outcomes	**Measures:** 1. Physical activity level (%). Measurement tool: Unnamed questionnaire 2. Walking (hours/week). Measurement tool: Unnamed questionnaire 3. Bicycling (hrs/wk). Measurement tool: Unnamed questionnaire 4. Leisure time physical activity (hours/week). Measurement tool: Unnamed questionnaire **Time points:** Baseline and follow up (2 years and 3 years)
Notes	Some gender specific changes observed in other measures

Wendel-Vos 2009 (*Continued*)

Risk of bias		
Item	**Authors' judgement**	**Description**
Selection bias	Yes	Not randomised. Basis of allocation is unclear, but presumably related to Maastrich being the same location as the study centre. Groups were comparable with respect to the incidence and prevalence of CVD, number of inhabitants, number of municipalities and degree of urbanisation. Differences in % of males and females. Poor response rate to sample survey - 55.5% and 57.5%. The effect of the study centre location within the intervention community is unknown
Performance bias	No	Unclear on whether communities were blinded. No evidence of contamination. Indeed contamination doubtful - 200km apart. Evaluation study does not identify issues of the interventions integrity
Attrition bias	Yes	Attrition from baseline to post-test was 37.3%.
Detection bias	Yes	Outcome measure metric appropriate - validated short version. Assumed to be applied as intended. Assessors were blinded to pre-intervention measurement. Quality of the physical activity assessed acceptable - over the period of one week. Poor response rate to sample (57.5% in Maastricht and 52.9% in control region). Based on population registries and would miss people not on registries
Reporting bias	No	No evidence of selective outcome reporting or incomplete reporting. Measures reported match the aims
Other	Unclear	The outcome analysis did adjust for baseline physical activity levels. Sample size calculation was undertaken
Overall bias	Yes	High risk of bias. 3 high risk categories.

Young 1996

Methods	**Study design:** Controlled before and after study (cohort & independent) **Sampling frame:** no detail **Sampling method:** no detail **Collection method:** survey **Ethics and informed consent:** no detail

Young 1996 (*Continued*)

Participants	**Communities:** Cities of California, USA - California, four cities: two intervention and two control (a fifth city, Santa Aria had only cardiovascular morbidity and mortality surveillance) **Country:** United States **Ages included in the assessment:** 12 - 74 years age **Reason provided for selection of the intervention community:** limited resources and overlap of media markets **Intervention community:** Monterey and Salinas **Comparison community:** Modesto and San Luis
Interventions	**Name of the intervention**: Stanford five city project **Theory**: Not explicitly stated **Aim**: Risk reduction educational program **Components**: 6 year integrated community wide multifactorial risk factor education program #1: mass media print materials, newspaper column, evening news; #4 talks seminars by health : April 1980 to July 1996 **Community strategy development phase:** No **Description of costs and resources:** None described **Components of the intervention as per the inclusion criteria**: #1 Social marketing - mass media print materials, newspaper column, evening news; #4 Partnering -talks seminars by health. Described as an integrated community wide multifactorial risk factor education program **Emphasis of intervention:** unclear **Information given on intensity:** described as "relatively weak intervention effort" **Assessment of intensity:** Medium **Start date:** 1980 **Duration:** 5 years
Outcomes	**Measures**: 1. % in vigorous activities. Measurement tool: Questionnaire 2. Sum of usual activities (maximum value =5); Questionnaire 3. Daily expenditure (kcal kg-1 day-1); Measurement tool: Stanford 7-day physical activity recall 4. Exercise knowledge. Measurement tool: Questionnaire (5 questions) **Time points:** Baseline (I1) and 3 other independent surveys (I2-4) and 3 other cohort surveys (C2-C4) which cover the first 6 years of the project. Surveys were conducted every 2 years
Notes	

Risk of bias

Item	Authors' judgement	Description
Selection bias	Yes	Not randomised. Allocation not concealed. There were significant baseline differences between treatment and control cities for most demographic variables. Control cities were more likely to be white, non-Hispanic and were more highly educated, less likely to smoke and have lower BMI 's. The men in the control cities were significantly younger than the men in the treatment cities

Young 1996 (*Continued*)

Performance bias	Unclear	No evidence of blinding. No evidence of contamination although possible (although likely low) risk given that mass media was used, and all communities were in northern California
Attrition bias	Yes	High Attrition 61% - due largely to emigration
Detection bias	Unclear	Physical activity measurement shown previously to be valid and reliable.. Physical activity measured over period of 7 days. Stated that participants we "Identified from randomly selected households", however there are no details as per the sampling frame nor the method of randomisation to determine appropriateness and whether truly representative. Response rates were 65, 70, 65 and 56% and thus reasonable representative
Reporting bias	No	No evidence of reporting bias
Other	Unclear	None identified. No sample size calculation for physical activity
Overall bias	Yes	High risk of bias. 2 high risk categories.

Zhang 2003

Methods	**Study design:** Controlled before and after study (independent) **Sampling frame:** Whole community **Sampling method:** Independent random samples using simple cluster plus systematic randomisation **Collection method:** Questionnaire survey and physical examination and blood tests **Ethics and informed consent:** not stated
Participants	**Communities:** Communitiy in Shandong, China **Country:** China **Ages included in the assessment:** 25-75 years **Reason provided for selection of the intervention community:** **Intervention community:** Intervention community (population 50 000) **Comparison community:** Control village
Interventions	**Duration**: 4 years **Name of the intervention**: not stated **Theory**: none stated **Aim**: Reduction of risk factors for diabetes **Community strategy development phase:** Yes **Description of costs and resources:** no description **Components of the intervention as per the inclusion criteria**: #2 Other communication strategies - to all residents of the city, going regularly from house to house to personally distribute handouts primarily info booklets. Local health officer providing health education and lectures. Exercise included as a risk factor targeted for modification; #3 Individual counselling - high risks and diabetes identified by primary care clinicians and tested

	and individual counselling (every 6-months high risk, 3 months diabetes). Primary intervention was health education of the risk factors for diabetes to ordinary people **Emphasis of intervention:** emphasis on individual counselling and screening with the provision of advise on risk factors. (#3) **Information given on intensity:** none provided **Assessment of intensity:** High **Start date:** 1997 **Duration:** 4 years
Outcomes	**Measures:** 1. Non-occupational physical activity (times/wk). Measurement tool: Unnamed questionnaire **Time points:** Baseline and follow up
Notes	Effects on measures of BMI and overweight

Risk of bias

Item	Authors' judgement	Description
Selection bias	Unclear	Not randomised and no details provided for allocation of communities.The studied communities had 50 000 population each. No information about the geographic, economic and culture characters. Comparisons were made with small samples (around 200) randomly chosen from the two communities. At baseline, two groups were comparable in terms of gender and age. Unclear what the effects of reversing communities would be
Performance bias	Unclear	No interventions in control group. There is no description of special measures to prevent contamination. Unlikely to have contamination because they were two cities. The integrity of the intervention is unclear
Attrition bias	No	Independent samples - Attrition n/a.
Detection bias	Yes	Physical activity was measured using survey questions and likely to have been applied as intended. No detailed information about the source and validity of the measures. Representativeness of the samples unclear. The samples were relatively small (around 200). It is hard to say that they can represent the whole communities
Reporting bias	Unclear	Reporting bias is possible given the brevity of reporting.
Other	Unclear	None
Overall bias	Yes	High risk of bias. 2 high risk categories

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Aadahl 2009	Not community wide
Ackermann 2003	Population not inclusive
Alcalay 1999	Wrong study design
Austin 2006	Wrong study design, not community wide (8 participants only)
Baker 2008	Not community wide
Balagopal 2008	Wrong study design, singular intervention without control
Bauman 2001	State level mass-media intervention rather than community level
Baxter 1997a	Intervention not eligible, does not address physical activity behaviour directly
Baxter 1997b	Intervention not eligible, does not address physical activity behaviour directly
Bennett 2006	Wrong study design
Berkowitz 2008	Population not inclusive
Bjaras 2001	Intervention not eligible
Blake 1987	Wrong study design, no control population
Blunt 2009	Intervention not eligible
Bopp 2008	Wrong study design
Brown 1996	Not community wide
Bull 2006	Wrong study design, baseline data of an RCT in one community
Caballero 1998	Intervention not eligible
Chan 2008	Not community wide, pedometer evaluation
Cheadle 2000	Wrong study design
Chen 2005	Wrong study design
Chen 2008	Wrong study design, no control group before intervention

(*Continued*)

Cheng 1998	Intervention not eligible
Cheng 2009	Not community wide, not inclusive
Cochrane 2008	Wrong study design, outcome assessment is retrospective
Coitinho 2002	Wrong study design
Craig 2006	Wrong study design, primarily a national campaign with pedometers
Currie 2001	Wrong study design, intervention not eligble
Davis 2003	Intervention not eligible
De Cocker 2008	Intervention does not meet criteria, not part of an included study
DeBar 2009	Population not inclusive
Dishman 2005	Intervention not eligible
Dollahite 1998	Intervention not eligible, physical activity not measured
Dowse 1995	Wrong study design, no control
Draper 2009	Intervention not eligible, study design retrospective qualitative process evaluation
Economos 2007	Population not inclusive (school children in years 1 -3), no intent to be community wide
Egawa 2007	Intervention not eligible, not inclusive
Eliah 2008	Intervention not eligible, eye care only
Englert 2004	Wrong study design, pilot only
Estabrooks 2008	Wrong study design, community based but not community wide
Fang 2003	Intervention not eligible, no physical activity
Fisher 2004	Population not inclusive
Futterman 2004	Intervention not eligible, insufficient
Gao 2008	Wrong study design, no control, only before and after comparison of intervention
Gorely 2009	Intervention not eligible, insufficient components, primary school based

(*Continued*)

Guo 2007	Wrong study design
Guo 2008	Not community wide
Han 2003	Intervention not eligible, not aimed at physical activity
Hillsdon 1995	Wrong study design, review only
Huhman 2007	Wrong study design, no contemporary control, primarily mass media, specific community components and effects not identified
Jason 1991	Intervention not eligible, less than 6 months, wrong study design
Kamieneski 2000	Intervention not eligible, too short, lack of physical activity
Kelder 1995	Intervention not eligible, focus is on healthy eating rather than physical activity
King 1995	Wrong study design
King 1998	Wrong study design
Kiyu 2006	Wrong study design, no control group, limited physical activity intervention
Larkin 2003	Wrong study design
Lawlor 2003	Intervention not eligible, singular strategy
Lee 2004	Intervention not eligible, only 3 months duration
Lee 2007	Not community wide, participants from the same community
Lee 2008a	Intervention not eligible, focus is substance miss-use
Lee 2008b	Not community wide, participants from the same community
Li 2002	Wrong study design
Li 2008	Intervention not eligible, patients with impaired glucose tolerance recruited from 35 clinics
Lindstrom 2003	Intervention not eligible, high risk groups identified and then randomised to intervention
Lyle 2008	Wrong study design, lacks a control, only 12 weeks duration
Maddock 2005	Wrong study design, lacks a control
Malmgren 1986	Wrong study design, also lacks relevancy

(*Continued*)

Marshall 2004	Wrong study design, inadequate intervention
Matsudo 2002	Wrong study design
Matsudo 2003	Wrong study design, no results
Merom 2005	Wrong study design, intervention not eligible (too short)
Meyer 1980	Intervention not eligible: primarily mass media, but the additional component not available to whole of community only selected individuals
Mohan 2006	Wrong study design
Muntoni 1999	Intervention not eligible, wrong study design - no control
Napolitano 2006	Wrong study design, worksites rather than community, duration too short
Niederer 2009	Intervention not eligible, primarily school-based
Owen 1987	Intervention not eligible, not to whole of community
Pabayo	Wrong study design, no control or intervention
Pekmezi 2009	Not community wide
Phelan 2002	Intervention not eligible
Plescia 2008	Wrong study design, comparison against historic reference data
Pucher 2003	Intervention not eligible, describes injuries
Puoane 2006	Intervention not eligible, not aimed at whole of community
Quan 2006	Wrong study design
Reger 2002	Intervention not eligible, intervention only 8 weeks, 1 month post followup
Reger-Nash 2006	Intervention not eligible, intervention only 8 weeks
Renger 2002	Wrong study design, uncontrolled, primarily mass media
Rhoades 2001	Intervention not eligible
Rodrigues 2006	Wrong study design, analysis of enviromental factors
Roman 2008	Intervention not eligible

(*Continued*)

Ronda 2004	Intervention not eligible, organisational only, physical activity not measured
Ronda 2004a	Intervention not eligible
Ronda 2005	Intervention not eligible
Rooney 2008	Wrong study design, uncontrolled, limited intervention
Ross 2009	No results, only a listing of interventions
Roux 2008	Wrong study design, cost-effectiveness synthesis
Sallis 2003	Intervention not eligible, primarily school-based
Sevick 2000	Intervention not eligible
Sevick 2007	Not community wide, groups defined by randomisation not community
Shea 1996	Intervention not eligible, inadequate physical activity focus
Shen 2007	Intervention not eligible, no physical activity
Simmons 1998	Population not inclusive
Simmons 2004	Not community wide, primarily only 1 strategy
Simmons 2008	Intervention not eligable, no outcomes of physical activity
Simoes 2009	Wrong study design
Simons-Morton 1998	Wrong study design
Sinclair 2007	Wrong study design
Singh 2006	Population not inclusive, school strategy only, no community involvement
Singh 2009	Population not inclusive
Slootmaker 2005	Intervention not eligible, no results
Smith 2000	Wrong study design
Smith 2002	Wrong study design
Smith 2004	Wrong study design

(*Continued*)

Smolander 2000	Not community wide
Sorensen 2005	Wrong study design
Sorensen 2006	Wrong study design, systematic review
Speck 2007	Intervention not eligible, one site, minimal environmental, women only
Spink 2008	Population not inclusive, one strategy only
Spittaels 2007	Intervention not eligible, web-based and no attempt to reach broader community
Spruijt-Metz 2008	Population not inclusive
Stamm 2001	Wrong study design
Stanton 1997	Intervention not eligible
Staten 2004	Not community wide
Staten 2005	Wrong study design, no control
Staunton 2003	Wrong study design, process evaluation
Steckler 2003	Wrong study design, school-based only
Steele 2007	Not community wide, not inclusive
Steptoe 1999	Not community wide
Steptoe 2000	Not community wide, GP practices only
Steptoe 2001	Not community wide, GP practices only
Sternberg 2006	Not community wide
Sternfeld 2009	Not community wide
Stevens 1998	Intervention not eligable
Stevens 1999	Wrong study design
Stevens 2005	Not community wide
Stewart 2001	Not community wide

(*Continued*)

Stewart 2004	Wrong study design
Stewart 2006	Intervention not eligible, school-based
Stock 2007	Intervention not eligible
Stone 1996	Not community wide, process evaluation of school-based intervention
Stone 1998	Wrong study design, review of school and community interventions
Strachan 2007	Wrong study design, no control
Stubbs 2002	Intervention not eligible
Sugden 2008	Not community wide
Sun 2007	Wrong study design
Tan 2006	Population not inclusive, randomised in same community, one strategy
TenBrink 2009	Wrong study design
Timperio 2004	Wrong study design
Togami 2008	Intervention not eligible
Tsai 2009	Intervention not eligible
Tsorbatzoudis 2005	Internvention not eligible, primarily school based
Tudor-Smith 1998	Intervention not eligible, physical activity not the focus
Tully 2007	Intervention not eligible, inadequate strategies
Two Feathers 2005	Population not inclusive, geography undefined
van Stralen 2009	Not community wide
Voyle 1999	Wrong study design, formative evaluation
Walker 2009	Intervention not eligible, population reach weak
Wallace 1998	Intervention not eligible, intervention and control participants from the same community
Wang 2009	Population not inclusive

(*Continued*)

Warden 1999	Wrong study design
Wardle 2001	Intervention not eligible, mass media
Warren 1999	Wrong study design
Wellman 2007	Not community wide, limited to one setting
Wen 2002	not community wide in focus
Whaley 2008	Intervention not eligible
Wheat 1996	Not community wide
Wiesemann 1997	Not community wide
Wilcox 2006	Population not inclusive, persons recruited at sites, non participants not exposed
Wilcox 2007	Not community wide, restricted setting
Wilcox 2009	Intervention not eligible, not community inclusive
Williams 2007	Not community wide, stricted to one employment sector
Wimbush 1998	Intervention not eligible, primarily mass-media, wrong study design
Wu 2004	Wrong study design, pre and post only
Wyatt 2008	Not community wide, recruited using mass media
Xu 2000	Intervention not eligible
Xu 2001	Intervention not eligible, does not include physical activity
Yancey 2001	Population not inclusive
Yancey 2003	Wrong study design, before and after only uncontrolled
Zhu 2008	Population not inclusive
Zivkovic 1998	Intervention not eligible

Characteristics of ongoing studies *[ordered by study ID]*

Eisenmann 2008

Trial name or title	SWITCH
Methods	Randomised study of 10 schools (catchment defining the community)
Participants	5 schools with community reach, 2 mid-west USA cities
Interventions	School-based, family and community, based on the social ecological model
Outcomes	free-living physical activity assessed by pedometer
Starting date	September 2005
Contact information	jce@msu.edu
Notes	

Wall 2009

Trial name or title	Well London Project
Methods	cluster-controlled trial
Participants	Delivered to 20 deprived areas across London, UK
Interventions	Series of interventions drawn from a set of projects by project partners. For four years
Outcomes	Self-reported physical activity through the last seven days (PAQ), well being measures, project processes
Starting date	Baseline data collection ran March 2008 to June 2009.
Contact information	m.wall@massey.ac.nz
Notes	

DATA AND ANALYSES

This review has no analyses.

ADDITIONAL TABLES

Table 1. Search results for electronic databases

Database	Number of hits
ASSIA	1144
British Nursing Index (BNI)	105
CINAHL	2881
Chinese atabase:CAJ,CCND,CPCD,CJSS,CMFD,CDFD, http://www.global.cnki.net/grid20/index.htm	124
Cochrane Library	1841
Cochrane Public Health Group Specialized Register	31
EMBASE	4941
EPPI Centre • DoPHER • TRoPHI	38 200
ERIC	416
Health Management Information Consortium (HMIC)	308
LILACS	416
MEDLINE & MEDLINE In-Process	5691
PsycINFO	1315
Sociological Abstracts	874
SPORTDiscus	365
Transport Database TRIS	49
Web of Science Science Citation Index, Social Sciences Citation Index and Conference Proceedings Citation Index	9108

Table 2. Search results for websites

Web sites	Hits
EU Platform on Diet, Physical Activity and Health	0
http://health-evidence.ca	5
IUHPE (International Union for Health Promotion and Education)	0
NCCHTA http://www.ncchta.org	1
NICE guidelines http://www.nice.org.uk	4
SIGN guidelines http://www.sign.ac.uk	0
US Centres for Disease Control and Prevention http://www.cdc.gov/	0
World Health Organisation http://www.who.int/en/	1

Table 3. Components included in interventions

Study	Mass Media	Other communication	Individual	Partnerships	Settings	Environmental	Total
Brown 2006	X	X	X	X	X	X	6
Brownson 2004		X	X	X		X	4
Brownson 2005	X	X	X	X			4
De Cocker 2007	X	X		X	X	X	5
Eaton 1999		X		X	X	X	4
Goodman 1995	X	X	X	X	X	X	6
Gu 2006		X	X				2
Guo 2006	X	X	X				3
Jenum 2006	X	X	X	X		X	5
Jiang 2008		X	X	X			3

Table 3. Components included in interventions (*Continued*)

Kloek 2006	X		X	X	X		4
Kumpusalo 1996		X	X	X	X		4
Luepker 1994	X	X	X	X	X	X	6
Lupton 2003	X		X	X	X		4
Nafziger 2001	X	X		X	X		4
Nishtar 2007	X		X	X			3
NSW Health 2002	X	X		X		X	4
O'Loughlin 1999		X	X	X		X	4
Osler 1993	X		X	X			3
Reger-Nash 2005	X	X	X	X	X		5
Sarrafzadegan 2009	X		X	X			3
Simon 2008				X	X	X	3
Wendel-Vos 2009	X	X		X	X		4
Young 1996	X	X		X			3
Zhang 2003		X	X				2
Total	15	18	19	22	11	7	

Table 4. Intensity of intervention

Study	High	Medium	Low	Unclear
Brown 2006	X			
Brownson 2004		X		
Brownson 2005		X		

Table 4. Intensity of intervention (*Continued*)

De Cocker 2007		X		
Eaton 1999	X			
Goodman 1995			X	
Gu 2006	X			
Guo 2006		X		
Jenum 2006		X		
Jiang 2008	X			
Kloek 2006			X	
Kumpusalo 1996		X		
Luepker 1994	X			
Lupton 2003	X			
Nafziger 2001	X			
Nishtar 2007			X	
NSW Health 2002			X	
O'Loughlin 1999		X		
Osler 1993			X	
Reger-Nash 2005		X		
Sarrafzadegan 2009		X		
Simon 2008			X	
Wendel-Vos 2009	X			
Young 1996		X		
Zhang 2003	X			
Total	9	10	6	0

Assessed subjectively as using the individual assessment of six characteristics

Table 5. Dichotomous outcomes - physical activity

Study	Overall bias	Measure	Definition	Net % change	Unadjusted RD	Adjusted RD (95% CI)	Unadjusted RR (95% CI)	Adjusted RR (95% CI)	Baseline
Wendel-Vos 2009	High risk of bias	% physically active	150 min/week and at least 5 session per week, and physically active at least 30 min/day at least 5 days/ week	-3.50	-0.7	-1.60 (-0.10 - -3.10)	0.86	0.97 (0.93 - 1.00)	42.8
Reger-Nash 2005	High risk of bias	% physically active	Moderate activity at least 30 minutes for at least 5 days per week or vigorous activity at least 20 minutes for at least 3 days per week	0.36	1.2	0.38 (-0.06 - 0.82)	1.15	1.01 (0.10 - 1.01)	46.9
Brown 2006	High risk of bias	% physically active	150 minutes of activity in at least 5 separate sessions in the last week	15.40	0.9	7.33 (-23.48 - 38.13)	1.02	1.18 (0.60 - 2.35)	41.9
Lupton 2003	High risk of bias	% physically active	Minimum of four hours of weekly moderate PA during the last year	9.84	8.3	6.87 (-13.04 - 26.78)	0.98	1.10 (0.84 - 1.43)	72.5

Table 5. Dichotomous outcomes - physical activity *(Continued)*

Sarrafzadegan 2009	Unclear risk of bias	% physically active	Individuals with >= 30 minutes/day of moderate or vigourous activity	4.19	-13.8	1.89 (-0.23 - 4.02)	1.07	1.06 (1.00 - 1.14)	47.0
Kloek 2006	Unclear risk of bias	% physically active	At least 30 minutes of moderate-intensity physical activity on at least 5 days a week	-7.36	-1	-3.97 (5.02 - -12.95)	1.04	0.93 (0.79 -1.10)	59.0
NSW Health 2002	High risk of bias	% physically active	Engaged in at least 150 minutes and five sessions of moderate activity or three sessions of vigorous activity per week	7.14	-0.2	3.39 (-0.29 - 7.08)	1.14	1.08 (0.99 - 1.17)	49.2
Jiang 2008	Unclear risk of bias	Regular physical activity	Not provided	18.12	6.38	10.75 (5.23 - 16.27)	1.24	1.20 (1.09 - 1.31)	60.39

RD = Risk difference
RR = Relative Risk

Table 6. Dichotomous outcomes - physical activity during leisure time

Study	Overall bias	Measure	Definition	Net % change	Unadjusted RD	Adjusted RD (95% CI)	Unadjusted RR	Adjusted RR (95% CI)	Baseline
Nishtar 2007	Unclear risk of bias	PA during leisure time	Not provided	-33.33	1.1	0.52 (-0.04 - 1.08)	2.41	0.84 (0.70 - 1.02)	3.0

Table 6. Dichotomous outcomes - physical activity during leisure time (*Continued*)

Kumpusalo 1996	High risk of bias	PA during leisure time	Undertaking physical activity during leisre time > 3 times weekly	-1.92	0.6	-0.64 (-8.24 - 6.96)	1.02	0.98 (0.80 - 1.21)	39.0
Luepker 1994	Unclear risk of bias	PA during leisure time	Regularly active during leisure time	[a]11.26	8.5	5.35 (-3.32 - 14.02)	1.08	1.11 (0.94 - 1.30)	48.6
				[b]9.4	14.2	4.70 (-1.64 - 11.04)	1.09	1.08 (0.97 - 1.20)	49.4

[a] data from independent surveys
[b] data from cohort surveys
RD = Risk difference
RR = Relative Risk

Table 7. Dichotomous outcomes - sedentary or physically inactive

Study	Overall bias	Measure	Definition	Net % change	Unadjusted RD	Adjusted RD (95% CI)	Unadjusted RR	Adjusted RR (95% CI)	Baseline
Jenum 2006	High risk of bias	Physically inactive	No heavy physical activity in leisure time or commuting (%)	-20.09	8.1	-8.13 (-18.92 - 2.65)	0.91	0.8 (0.59 - 1.08)	40.5
Nafziger 2001	Unclear risk of bias	Sedentary (%)	Involved in a physical activity strenuous enough to work up a sweat <3 times/ week	-15.85	-11.6	-11.43 (-23.06 - 0.21)	0.89	0.84 (0.71 - 1.00)	72.5
Osler 1993	High risk of bias	Physically inactive (%)	No details provided	20.51	7	2.07 (-125.30 -	1.00	1.16 (0.00 - 9517.54)	13.0

Table 7. Dichotomous outcomes - sedentary or physically inactive (*Continued*)

						129.45)			
Goodman 1995	Unclear risk of bias	Physically inactive (%)	Physically inactive was defined as engaging in no physical activity or exercise during the last month	-1.82	11.3	-1.02 (-3.03 - 0.99)	0.97	0.99 (0.96 - 1.01)	44.6

[a] Men <= 35
[b] Men >= 35
[c] Women <= 35
[d] Women >= 35
RD = Risk difference
RR = Relative Risk

Table 8. Continuous outcomes - leisure time physical activity

Study	Measure	Subgroup	Post mean difference	Adjusted mean difference	Adjusted % change relative to the control mean	Baseline value	Timeline
Wendel-Vos 2009	Leisure time PA (hours/week)	Men	-0.2	-0.4	-2.06	19.8	5 years
		Women	-0.7	2.2	14.01	15.4	
De Cocker 2007	Leisure time PA (min/week)	Leisure time physical activity	0	32	25.60	140	1 year
Simon 2008	Supervised leisure time physical activity (hours/week)	N/A	0.9	1.1	43.14	2.5	4 years

Table 9. Continuous outcomes - walking

Study	Measure	Sub group	Post mean difference	Adjusted mean difference	Adjusted % change relative to the control mean	Baseline value	Timeline
Wendel-Vos 2009	Walking (hours/week)	Male	1.8	1.1	15.94	8.5	5 years
		Women	1.8	2.0	29.41	8.9	
De Cocker 2007	Pedometer-determined (steps/day)	N/A	987	10.0	10.80	9597	1 year
	Walking (min/week)	N/A	34	47	17.34	288	
Brownson 2005	Walking (mean min/week)	N/A	-0.8	5.2	4.75	97	1 year
Brownson 2004	7 day total walking (mean min/week)	N/A	-5.3	-1.4	-1.38	97.2	2 years
	7 day walking for exercise (mean min/week)	N/A	-0.1	-5.6	-17.61	37.3	

Table 10. Continuous outcomes - energy expenditure

Study	Measure	Post mean difference	Adjusted mean difference	Adjusted % change relative to the control mean	Baseline value	Timeline
Sarrafzadegan 2009	Total daily PA (MET-m/week ± SD)	32	46	9.09	606	3 years
	Leisure time PA (MET-m.week)	14	13	12.26	85	3 years
Kloek 2006	METs/week	81	-241	-3.54	7253	2 years

APPENDICES

Appendix 1. Search strategies

The searches were based on the following strategy, developed in Medline and adapted as appropriate to the specifications of each database and web site. The strategy was deliberately designed to capture a broad range of references and the 'explode' feature was used wherever this was applicable to the database. There were no language restrictions.

All information sources were searched in October/November 2009 for publications from January 1995 onwards.

ASSIA January 1995 to 12 November 2009 [1144 hits]

Search Query #79 ((DE=("**communities**" or "**alternative communities**" or "**kibbutzim**" or "**gated communities**" or "**ghettoes**" or "**local communities**" or "**master planned communities**" or "**mining communities**" or "**religious communities**" or "**base ecclesial communities**" or "**christian communities**" or "**amish communities**" or "**anglican religious communities**" or "**mennonite communities**" or "**roman catholic communities**" or "**jewish communities**" or "**haredim communities**" or "**hassidic communities**" or "**monastic communities**" or "**muslim communities**" or "**sikh communities**" or "**zoroastrian communities**" or "**retirement communities**" or "**rural communities**" or "**isolated communities**" or "**slum communities**" or "**smeltering communities**" or "**virtual communities**")) or(DE=("**community agencies**" or "**community based**" or "**community based action research**")) or(DE=("**community based redevelopment**" or "**community based action research**" or "**community based preventive programmes**" or "**community based programmes**")) or(DE=("**community based research**" or "**community based action research**")) or(DE=("**health promotion**" or "**mental health promotion**" or "**sexual health promotion**")) or(DE=("**mass media**" or "**advertisements**" or "**personal advertisements**" or "**posters**" or "**broadcasting**" or "**radio**" or "**local radio**" or "**religious broadcasting**" or "**television**" or "**animation**" or "**cable television**" or "**closed circuit television**" or "**commercial television**" or "**digital television**" or "**interactive television**" or "**live television**" or "**local television**" or "**satellite television**" or "**films**" or "**documentary films**" or "**educational films**" or "**erotic films**" or "**gangster films**" or "**horror films**" or "**silent films**" or "**suspense films**" or "**war films**" or "**western films**" or "**newspapers**" or "**electronic newspapers**" or "**student newspapers**" or "**tabloid newspapers**" or "**periodicals**" or "**academic journals**" or "**children s magazines**" or "**comics**" or "**consumer magazines**" or "**dialogue journals**" or "**farming magazines**" or "**fashion magazines**" or "**feminist periodicals**" or "**literary journals**" or "**medical journals**" or "**men s magazines**" or "**popular magazines**" or "**women s magazines**" or "**problem pages**" or "**young people s magazines**" or "**young women s magazines**" or "**press**" or "**local press**")) or(DE="**mass campaigns**") or(DE="**social marketing**") or(KW=((**state** or **county** or **town** or **city** or **village** or **nation***) and (**wide** or **whole** or **communit***))) or(KW=(**media intervention*** or **whole community** or **community intervention*** or **community organsai? ation***)) or(KW= (**community** and (**design** or **action** or **program*** or **partner***))) or(KW= ((**health** or **community** or **environment***) and (**policy** or **policies**))) or(KW= (**urban design** or "**land use policies**" or "**land use policy**")) or(KW= ((**transportation** or **travel**) and (**policy** or **policies**))) or(KW=**health planning**) or(KW= ((**neighbo?rhood*** or **city** or **cities** or **community**) and (**development** or **regeneration** or **renewal** or **design*** or **plan*** or **polic***))) or(KW= (**community wide** or **community setting*** or **community group*** or **organi?ation* level***)) or(KW= (**Communit* base***)) or(KW= ((**built environment*** or **urban environment*** or **environmental**) and (**change*** or **intervention***))) or(KW= **environment* infrastructure**) or(KW= (**urban** and (**regeneration** or **renewal** or **plan*** or **design*** or **policy** or **policies** or **strateg*** or **program***))) or(KW= ((**media** or **advertising** or **radio** or **television** or **newspaper*** or **poster*** or **flyer*** or "**information booklet***") and (**information** or **education** or **campaign** or **intervention** or **strateg*** or **program*** or **policy** or **policies**))) or(KW=**social marketing**) or(KW= ("**point of decision**" **adj3** (**stair*** or **travel***))) or(KW= (**health counsel*** or **individual counsel***)) or(KW= (**community** and (**collaborati*** or **coalition**))) or(KW= ((**school*** or **work?place*** or **employer*** or **classroom** or **college**) and (**strateg*** or **program*** or **policy** or **policies**))) or(KW= ((**public** or **community**) and (**information** or **education** or **campaign** or **intervention** or **strateg*** or **program*** or **policy** or **policies**))) or(KW= (**policy change*** or **fiscal change***)) or(KW= (**policy** and (**interven*** or **change** or **introduce*** or **modif*** or **alter***))) or(KW=**physical infrastructure**) or(KW= ((**road** or **land**) and **us***)) or(KW= (**Legislation** or **legislative**)) or(KW= ((**Voluntary** or **volunteer** or **charities** or **charity** or **non-government** or **government** or "**not for profit**") and (**group***1 or **organisation*** or department*1 or club*1)))) and((DE=("**exercise**" or "**aerobic exercise**" or "**dance exercise**" or "**fitness training**" or "**pelvic floor exercise**" or "**structured exercise**" or "**tai chi**" or "**water exercise**" or "**weight training**" or "**weightlifting**" or "**yoga**" or "**hatha yoga**" or "**sahaja yoga**")) or(DE=("**physical fitness**" or "**exercise**" or "**aerobic exercise**" or "**dance exercise**" or "**fitness training**" or "**pelvic floor exercise**" or "**structured exercise**" or "**tai chi**" or "**water exercise**" or "**weight training**" or "**weightlifting**" or "**yoga**" or "**hatha yoga**" or "**sahaja yoga**")) or(KW= (**fitness adj class***)) or(KW= (**fitness adj** (**regime*** or **program***))) or(KW=**cardiorespiratory fitness**) or(KW=**aerobic capacity**) or(KW= ((**moderate** or **vigorous***) and **activ***)) or(KW= (**led walk*** or **health walk***)) or(KW= (**physical** and (**fit*** or **train*** or **activ*** or **endur***))) or(KW= (**exercis*** and (**fit*** or **train*** or **activ*** or **endur***))) or(KW= ((**leisure** or **fitness**) and (**centre*** or **center*** or **facilit***))) or(KW= ((**promot*** or **uptak*** or **encourag*** or **increas*** or **start*** or **adher*** or **sustain*** or **maintain***) and **gym***)) or(KW= ((**promot*** or **uptak*** or **encourag*** or **increas*** or **start*** or **adher*** or **sustain*** or **maintain***) and **physical activ***)) or(KW= ((**promot*** or **uptak*** or **encourag*** or **increas*** or

start* or **adher*** or **sustain*** or **maintain***) and (**circuit*** or **aqua***))) or(KW= ((**promot*** or **uptak*** or **encourag*** or **increas*** or **start*** or **adher*** or **sustain*** or **maintain***) and (**exercis*** or **exertion** or **keep fit** or **fitness class** or **yoga** or **aerobic***))) or(KW= ((**decreas*** or **reduc*** or **discourag***) and (**sedentary** or **deskbound** or "**physical* inactiv***"))) or(KW=**sport*** or **walk*** or **running** or **jogging** or **pilates** or **yoga**) or(KW= ((**cycle** or **cycling**) and (**school*** or **work** or **workplace** or **commut*** or **travel*** or **equipment** or **facilit*** or rack*1 or store*1 or **storing** or **park*** or **friendly** or **infrastructure**))) or(KW=**bicycl*** or **bike*** or **biking** or **swim*** or **swimming**) or(KW= (**aerobic* exercise***)) or(KW=**rollerblading** or **rollerskating** or **skating** or **exertion*** or "**strength training**" or "**resilience trainig**" or "**weight lifting**") or(KW=**travel mode***) or(KW= (**active adj** (**travel*** or **transportation** or **commut***))) or(KW= (**multimodal transportation** or **alternative transport*** or **alternative travel***)) or(KW=**recreation***) or(KW= (**use** and **stair***)) or(KW= (**pedestrianis*** or **pedestrianiz***))) and((DE=("**randomized controlled trials**" or "**clinical randomized controlled trials**" or "**cluster randomized controlled trials**" or "**double blind randomized controlled trials**" or "**randomized consent design**" or "**single blind randomized controlled trials**" or "**urn randomization**")) or(DE="**comparative studies**") or(DE="**evaluative research**") or(KW= (**randomized** or **randomised** or **placebo** or **randomly** or **trial**)) or(KW=**quasi-experiment***) or(KW= (**pre test** or **pretest** or (**posttest** or **post test**))) or(KW=**trial**) or(KW= **time series**) or(KW= (**pre test** or **pretest** or (**posttest** or **post test**))) or(KW= ((**evaluat*** or **intervention** or **interventional**) and (**control** or **controlled** or **study** or **program*** or **comparison** or "**before and after**" or **comparative**))) or(KW= ((**intervention** or **interventional**) and (**effect*** or **evaluat*** or **outcome***))) or(KW= ((**process** or **program***) and (**effect*** or **evaluat***))) or(KW= ("**controlled before**" or "**before and after stud***" or "**follow up assessment**")))

British Nursing Index (BNI) January 1995 to 9 November 2009 [105 hits]

#	Searches	Results
1	exp health promotion/	
2	exp community health services/	
3	(national adj (policy or policies or strateg$ or program$)).ti,ab	
4	exp mass media/	
5	"health education"/	
6	social marketing/ or "marketing"/ or public relations/	
7	((state or county or town or city or village or nation*) adj2 (wide or whole or communit*)).ti,ab	
8	((combined$ or multiple or multi or multifactorial or partner$) adj2 (program$ or strateg$ or intervention$ or organi?ation$)).ti,ab	
9	(media intervention* or whole community or community intervention* or community organsai?ation$1).ti,ab	
10	(community adj2 (design or action or program* or partner$)) .ti,ab	
11	((health or community or environment*) adj (policy or policies)).ti,ab	
12	(urban design or "land use policies" or "land use policy").ti,ab	

(*Continued*)

13	((transportation or travel) adj (policy or policies)).ti,ab.	
14	health planning.ti,ab.	
15	((neighbo?rhood* or city or cities or community) adj2 (development or regeneration or renewal or design* or plan* or polic*)).ti,ab	
16	(community wide or community setting$ or community group$ or organi?ation$ level$1).ti,ab	
17	(Communit$ adj2 base$).ti,ab.	
18	((built environment* or urban environment* or environmental) adj (change* or intervention*)).ti,ab	
19	(environment$ adj2 infrastructure).ti,ab.	0
20	(urban adj2 (regeneration or renewal or plan* or design* or policy or policies or strateg* or program$)).ti,ab	9
21	((media or advertising or radio or television or newspaper* or poster* or flyer* or "information booklet*") adj3 (information or education or campaign or intervention or strateg$ or program$ or policy or policies)).ti,ab	
22	social marketing.ti,ab.	
23	("point of decision" adj3 (stair* or travel*)).ti,ab.	
24	(health counsel* or individual counsel*).ti,ab.	
25	(community adj3 (collaborati* or coalition)).ti,ab.	
26	((school* or work?place* or employer* or classroom or college) adj2 (strateg$ or program$ or policy or policies)).ti,ab	
27	((public or community) adj2 (information or education or campaign or intervention or strateg$ or program$ or policy or policies)).ti,ab	
28	(policy change* or fiscal change*).ti,ab.	
29	(policy adj3 (interven$ or change or introduce$ or modif$ or alter$)).ti,ab	
30	physical infrastructure.ti,ab.	

(*Continued*)

31	((road or land) adj us*).ti,ab.	
32	(Legislation or legislative).ti,ab.	
33	((Voluntary or volunteer or charities or charity or non-government or government or "not for profit") adj2 (group$1 or organisation$ or department$1 or club$1)).ti,ab	
34	or/1-33	
35	exp exercise/	
36	physical fitness/	
37	(fitness adj class*).ti,ab.	
38	exp sport/	
39	exp yoga/	
40	(fitness adj (regime* or program*)).ti,ab.	
41	cardiorespiratory fitness.ti,ab.	
42	aerobic capacity.ti,ab.	
43	((moderate or vigorous*) adj activ*).ti,ab.	
44	(led walk* or health walk*).ti,ab.	
45	(physical adj5 (fit* or train* or activ* or endur*)).ti,ab.	
46	(exercis* adj5 (fit* or train* or activ* or endur*)).ti,ab.	
47	((leisure or fitness) adj5 (centre* or center* or facilit*)).ti,ab	
48	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 gym*).ti,ab	
49	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 physical activ*).ti,ab	
50	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 (circuit* or aqua*)).ti,ab	

(*Continued*)

51	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 (exercis* or exertion or keep fit or fitness class or yoga or aerobic*)).ti,ab	
52	((decreas* or reduc* or discourag*) adj5 (sedentary or deskbound or "physical* inactiv*")).ti,ab	
53	sport*3.ti,ab.	
54	walk*3.ti,ab.	
55	running.ti,ab.	
56	jogging.ti,ab.	
57	pilates.ti,ab.	
58	yoga.ti,ab.	
59	((cycle or cycling) adj5 (school$ or work or workplace or commut$ or travel$ or equipment or facilit$ or rack$1 or store$1 or storing or park$ or friendly or infrastructure)).ti,ab	
60	bicycl*.ti,ab.	
61	(bike*1 or biking).ti,ab.	
62	(swim*1 or swimming).ti,ab.	
63	(exercis*3 adj5 aerobic*).ti,ab.	
64	rollerblading.ti,ab.	
65	rollerskating.ti,ab.	
66	skating.ti,ab.	
67	exertion*1.ti,ab.	
68	strength training.ti,ab.	
69	resilience training.ti,ab.	
70	weight lifting.tw.	
71	travel mode*1.tw.	

(*Continued*)

72	(active adj (travel*4 or transport* or commut$)).tw.	
73	(multimodal transportation or alternative transport* or alternative travel*).ti,ab	
74	recreation*1.ti,ab.	
75	("use" adj3 stair*).ti,ab.	
76	(pedestrianis* or pedestrianiz*).ti,ab.	
77	or/35-76	
78	(randomized or randomised or placebo or randomly or trial).ab	
79	Random allocation/ or clinical trial/ or single-blind method/ or double-blind method/ or control groups/	
80	quasi-experiment$.ti,ab.	
81	(pre test or pretest or (posttest or post test)).ti,ab.	
82	trial.ti.	
83	(time adj series).ti,ab.	
84	(pre test or pretest or (posttest or post test)).ti,ab.	
85	((evaluat$ or intervention or interventional) adj8 (control or controlled or study or program$ or comparison or "before and after" or comparative)).ti,ab	
86	((intervention or interventional) adj8 (effect* or evaluat* or outcome*)).ti,ab	
87	((process or program*) adj3 (effect* or evaluat*)).ti,ab.	
88	(controlled before or "before and after stud$" or follow up assessment).ti,ab	
89	or/78-88	
90	34 and 77 and 89	
91	limit 90 to yr="1995-2009"	

CINAHL January 1995 to 13 November 2009 [2881 hits]
(MH "Communities+") or (MH "health promotion+") or (MH "Communications media") or (MH "Social marketing")
OR
TX ("state wide" or "nation* wide" or "community wide" or "land use" or "urban renewal" or "transportation policy" or "travel policy" or "neighbourhood regeneration" or "mass media" or advertising or radio or television or newspaper* or poster* or flyer* or social marketing or "point of decision" * or legislation or legislative or policy)
AND
(MH "Exercise+") or (MH "physical fitness+") or (MH "Sports+")
OR
TX (fitness or aerobic capacity or activ* or walk* or yoga or sedentary or deskbound or inactiv* or running or jogging or pilates or yoga or cycle or cycling or bicycl* or bike* or biking or swim* or swimming or rollerblading or rollerskating or skating or exertion* or "stair use" or "active transport*")
AND
(MH "experimental studies+")
TX (randomized or randomised or placebo or randomly or trial or "quasi-experiment*" or pre test or pretest or posttest or "post test" or "time series" or "controlled stud*" or "before and after" or "controlled before")
Limit to 1995-2009
Chinese databases: CAJ,CCND,CPCD,CJSS,CMFD,CDFD. January 1995 to 20 November 2009 [124 hits]
http://www.global.cnki.net/grid20/index.htm
Search Condition:((??=**community intervention**))(Precise);????;??? Cross-database Search(????)
OR
Search Condition:((??="health+education" And ??=intervention))and (??=Physical+activity" ?? ??=physical+exercise))(Precise);????;??? Cross-database Search(????)
OR
Search Condition:((??=community And ??=intervention))and (??="physical+activity" ?? ??="Physical+exercise"))(Precise);????;??? Cross-database Search(????)
Chinese characters not recognised by Review Manager. Available upon request.

The Cochrane Library January 1995 to 9 November 2009 [1841 hits]
Searched via Ovid EBM Reviews

#	Searches	Results
1	residence characteristics/	
2	community health planning/	
3	exp health promotion/	
4	exp community health services/	
5	(national adj (policy or policies or strateg$ or program$)).ti,ab	
6	exp mass media/	
7	community networks/	
8	community health centers/	

(*Continued*)

9	"marketing of health services"/	
10	cities/	
11	rural population/ or rural health/	
12	urban population/	
13	community-institutional relations/	
14	exp environment design/	
15	city planning/	
16	environmental planning.ti,ab.	
17	social environment/	
18	urban health/	
19	"health education"/	
20	social marketing/	
21	((state or county or town or city or village or nation*) adj2 (wide or whole or communit*)).ti,ab	
22	((combined$ or multiple or multi or multifactorial or partner$) adj2 (program$ or strateg$ or intervention$ or organi?ation$)).ti,ab	
23	(media intervention* or whole community or community intervention* or community organsai?ation$1).ti,ab	
24	(community adj2 (design or action or program* or partner$)).ti,ab	
25	((health or community or environment*) adj (policy or policies)).ti,ab	
26	(urban design or "land use policies" or "land use policy").ti,ab	
27	((transportation or travel) adj (policy or policies)).ti,ab.	
28	health planning.ti,ab.	

(*Continued*)

29	((neighbo?rhood* or city or cities or community) adj2 (development or regeneration or renewal or design* or plan* or polic*)).ti,ab	
30	(community wide or community setting$ or community group$ or organi?ation$ level$1).ti,ab	
31	(Communit$ adj2 base$).ti,ab.	
32	((built environment* or urban environment* or environmental) adj (change* or intervention*)).ti,ab	
33	(environment$ adj2 infrastructure).ti,ab.	
34	(urban adj2 (regeneration or renewal or plan* or design* or policy or policies or strateg* or program$)).ti,ab	
35	((media or advertising or radio or television or newspaper* or poster* or flyer* or "information booklet*") adj3 (information or education or campaign or intervention or strateg$ or program$ or policy or policies)).ti,ab	
36	social marketing.ti,ab.	
37	("point of decision" adj3 (stair* or travel*)).ti,ab.	
38	(health counsel* or individual counsel*).ti,ab.	
39	(community adj3 (collaborati* or coalition)).ti,ab.	
40	((school* or work?place* or employer* or classroom or college) adj2 (strateg$ or program$ or policy or policies)).ti,ab	
41	((public or community) adj2 (information or education or campaign or intervention or strateg$ or program$ or policy or policies)).ti,ab	
42	(policy change* or fiscal change*).ti,ab.	
43	(policy adj3 (interven$ or change or introduce$ or modif$ or alter$)).ti,ab	
44	physical infrastructure.ti,ab.	
45	((road or land) adj us*).ti,ab.	
46	(Legislation or legislative).ti,ab.	

(*Continued*)

47	((Voluntary or volunteer or charities or charity or non-government or government or "not for profit") adj2 (group$1 or organisation$ or department$1 or club$1)).ti,ab	
48	or/1-47	
49	exp exercise/	
50	running/	
51	walking/	
52	physical fitness/	
53	swimming/	
54	(fitness adj class*).ti,ab.	
55	gardening/	
56	exp "physical education and training"/	
57	exp dancing/	
58	exp sports/	
59	exp sport/	
60	exp yoga/	
61	exp fitness centers/	
62	recreation/	
63	"play and playthings"/	
64	exp motor activity/	
65	(fitness adj (regime* or program*)).ti,ab.	
66	cardiorespiratory fitness.ti,ab.	
67	aerobic capacity.ti,ab.	
68	((moderate or vigorous*) adj activ*).ti,ab.	
69	(led walk* or health walk*).ti,ab.	

(*Continued*)

70	(physical adj5 (fit* or train* or activ* or endur*)).ti,ab.	
71	(exercis* adj5 (fit* or train* or activ* or endur*)).ti,ab.	
72	((leisure or fitness) adj5 (centre* or center* or facilit*)).ti,ab	
73	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 gym*).ti,ab	
74	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 physical activ*).ti,ab	
75	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 (circuit* or aqua*)).ti,ab	
76	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 (exercis* or exertion or keep fit or fitness class or yoga or aerobic*)).ti,ab	
77	((decreas* or reduc* or discourag*) adj5 (sedentary or deskbound or "physical* inactiv*")).ti,ab	
78	sport*3.ti,ab.	
79	walk*3.ti,ab.	
80	running.ti,ab.	
81	jogging.ti,ab.	
82	pilates.ti,ab.	
83	yoga.ti,ab.	
84	((cycle or cycling) adj5 (school$ or work or workplace or commut$ or travel$ or equipment or facilit$ or rack$1 or store$1 or storing or park$ or friendly or infrastructure)).ti,ab	
85	bicycl*.ti,ab.	
86	(bike*1 or biking).ti,ab.	
87	(swim*1 or swimming).ti,ab.	
88	(exercis*3 adj5 aerobic*).ti,ab.	
89	rollerblading.ti,ab.	

(*Continued*)

90	rollerskating.ti,ab.	
91	skating.ti,ab.	
92	exertion*1.ti,ab.	
93	strength training.ti,ab.	
94	resilience training.ti,ab.	
95	weight lifting.tw.	
96	travel mode*1.tw.	
97	(active adj (travel*4 or transport* or commut$)).tw.	
98	(multimodal transportation or alternative transport* or alternative travel*).ti,ab	
99	recreation*1.ti,ab.	
100	("use" adj3 stair*).ti,ab.	
101	(pedestrianis* or pedestrianiz*).ti,ab.	
102	or/49-101	
103	randomized controlled trial.pt.	
104	controlled clinical trial.pt.	
105	(randomized or randomised or placebo or randomly or trial).ab	
106	Random allocation/ or clinical trial/ or single-blind method/ or double-blind method/ or control groups/	
107	Intervention studies/	
108	evaluation studies/	
109	program evaluation/	
110	Comparative study.pt.	
111	quasi-experiment$.ti,ab.	
112	(pre test or pretest or (posttest or post test)).ti,ab.	

(*Continued*)

113	trial.ti.	
114	(time adj series).ti,ab.	
115	(pre test or pretest or (posttest or post test)).ti,ab.	
116	((evaluat$ or intervention or interventional) adj8 (control or controlled or study or program$ or comparison or "before and after" or comparative)).ti,ab	
117	((intervention or interventional) adj8 (effect* or evaluat* or outcome*)).ti,ab	
118	((process or program*) adj3 (effect* or evaluat*)).ti,ab.	
119	(controlled before or "before and after stud$" or follow up assessment).ti,ab	
120	or/103-119	
121	animals/ not (humans/ and animals/)	
122	120 not 121	
123	48 and 102 and 122	
124	limit 123 to yr="1995-2009" [Limit not valid in DARE; records were retained]	

Cochrane Public Health Group Specialized Register of Studies
January 1995 to 19 November 2009 [31 hits]
Community wide interventions

Characteristics of the intervention: Physical activity

EMBASE January 1995 to 6 November 2009 [4941 hits]

#	Searches
1	health promotion/
2	community program/
3	(national adj (policy or policies or strateg$ or program$)).ti,ab

(*Continued*)

4	mass medium/
5	social network/
6	health center/
7	marketing/
8	city/
9	rural population/
10	urban population/
11	public relations/
12	exp "environment aspects and related phenomena"/
13	city planning/
14	environmental planning.ti,ab.
15	exp social environment/
16	school health education/
17	social marketing/
18	((state or county or town or city or village or nation*) adj2 (wide or whole or communit*)).ti,ab
19	((combined$ or multiple or multi or multifactorial or partner$) adj2 (program$ or strateg$ or intervention$ or organi?ation$)).ti,ab
20	(media intervention* or whole community or community intervention* or community organsai?ation$1).ti,ab
21	(community adj2 (design or action or program* or partner$)).ti,ab
22	((health or community or environment*) adj (policy or policies)).ti,ab
23	(urban design or "land use policies" or "land use policy").ti,ab
24	((transportation or travel) adj (policy or policies)).ti,ab.
25	health planning.ti,ab.
26	((neighbo?rhood* or city or cities or community) adj2 (development or regeneration or renewal or design* or plan* or polic*)).ti,ab

(*Continued*)

27	(community wide or community setting$ or community group$ or organi?ation$ level$1).ti,ab
28	(Communit$ adj2 base$).ti,ab.
29	((built environment* or urban environment* or environmental) adj (change* or intervention*)).ti,ab
30	(environment$ adj2 infrastructure).ti,ab.
31	(urban adj2 (regeneration or renewal or plan* or design* or policy or policies or strateg* or program$)).ti,ab
32	((media or advertising or radio or television or newspaper* or poster* or flyer* or "information booklet*") adj3 (information or education or campaign or intervention or strateg$ or program$ or policy or policies)).ti,ab
33	social marketing.ti,ab.
34	("point of decision" adj3 (stair* or travel*)).ti,ab.
35	(health counsel* or individual counsel*).ti,ab.
36	(community adj3 (collaborati* or coalition)).ti,ab.
37	((school* or work?place* or employer* or classroom or college) adj2 (strateg$ or program$ or policy or policies)).ti,ab
38	((public or community) adj2 (information or education or campaign or intervention or strateg$ or program$ or policy or policies)).ti,ab
39	(policy change* or fiscal change*).ti,ab.
40	(policy adj3 (interven$ or change or introduce$ or modif$ or alter$)).ti,ab
41	physical infrastructure.ti,ab.
42	((road or land) adj us*).ti,ab.
43	(Legislation or legislative).ti,ab.
44	((Voluntary or volunteer or charities or charity or non-government or government or "not for profit") adj2 (group$1 or organisation$ or department$1 or club$1)).ti,ab
45	or/1-44
46	exp exercise/
47	exp physical activity/
48	walking/

(*Continued*)

49	fitness/
50	swimming/
51	(fitness adj class*).ti,ab.
52	gardening/
53	physical education/
54	dancing/
55	exp sport/
56	exp kinesiotherapy/
57	(fitness adj (regime* or program*)).ti,ab.
58	cardiorespiratory fitness.ti,ab.
59	aerobic capacity.ti,ab.
60	((moderate or vigorous*) adj activ*).ti,ab.
61	(led walk* or health walk*).ti,ab.
62	(physical adj5 (fit* or train* or activ* or endur*)).ti,ab.
63	(exercis* adj5 (fit* or train* or activ* or endur*)).ti,ab.
64	((leisure or fitness) adj5 (centre* or center* or facilit*)).ti,ab
65	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 gym*).ti,ab
66	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 physical activ*).ti,ab
67	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 (circuit* or aqua*)).ti,ab
68	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 (exercis* or exertion or keep fit or fitness class or yoga or aerobic*)).ti,ab
69	((decreas* or reduc* or discourag*) adj5 (sedentary or deskbound or "physical* inactiv*")).ti,ab
70	sport*3.ti,ab.
71	walk*3.ti,ab.

(*Continued*)

72	running.ti,ab.
73	jogging.ti,ab.
74	pilates.ti,ab.
75	yoga.ti,ab.
76	((cycle or cycling) adj5 (school$ or work or workplace or commut$ or travel$ or equipment or facilit$ or rack$1 or store$1 or storing or park$ or friendly or infrastructure)).ti,ab
77	bicycl*.ti,ab.
78	(bike*1 or biking).ti,ab.
79	(swim*1 or swimming).ti,ab.
80	(exercis*3 adj5 aerobic*).ti,ab.
81	rollerblading.ti,ab.
82	rollerskating.ti,ab.
83	skating.ti,ab.
84	exertion*1.ti,ab.
85	strength training.ti,ab.
86	resilience training.ti,ab.
87	weight lifting.tw.
88	travel mode*1.tw.
89	(active adj (travel*4 or transport* or commut$)).tw.
90	(multimodal transportation or alternative transport* or alternative travel*).ti,ab
91	recreation*1.ti,ab.
92	(”use“ adj3 stair*).ti,ab.
93	(pedestrianis* or pedestrianiz*).ti,ab.
94	or/46-93

(*Continued*)

95	randomized controlled trial/
96	controlled clinical trial/
97	(randomized or randomised or placebo or randomly or trial).ab
98	exp controlled study/
99	Intervention study/
100	evaluation research/
101	evaluation/
102	Comparative study/
103	quasi-experiment$.ti,ab.
104	(pre test or pretest or (posttest or post test)).ti,ab.
105	trial.ti.
106	(time adj series).ti,ab.
107	(pre test or pretest or (posttest or post test)).ti,ab.
108	((evaluat$ or intervention or interventional) adj8 (control or controlled or study or program$ or comparison or "before and after" or comparative)).ti,ab
109	((intervention or interventional) adj8 (effect* or evaluat* or outcome*)).ti,ab
110	((process or program*) adj3 (effect* or evaluat*)).ti,ab.
111	(controlled before or "before and after stud$" or follow up assessment).ti,ab
112	or/95-111
113	45 and 94 and 112
114	animals/ not (humans/ and animals/)
115	113 not 114
116	limit 115 to yr="1995-2009"

EPPI Centre DoPHER January 1995 to 24 November 2009 [38 hits]
Focus of the Report = Physical Activity
AND
What type of study does this report describe = Intervention

Then screened for potentially relevant studies.

EPPI Centre TRoPHI January 1995 to 24 November 2009 [200 hits]
Focus of the report = Physical activity
AND
Intervention site(s): community site OR educational institution OR home OR mass media OR outreach OR preschool OR primary education OR secondary education OR tertiary education OR workplace site OR intervention site unspecified
AND
Type(s) of intervention: environmental modification OR incentives OR legislation OR regulation OR resource access OR service access OR social support OR intervention type unspecified
AND
What type of study does this report describe?: RCT OR trial

Then screened for potentially relevant studies.

ERIC January 1995 to 13 November 2009 [416 hits]

No.	Database	Search term
1	ERIC	Communit$
2	ERIC	Health promotion
3	ERIC	mass media OR advertisement$ OR posters OR broadcasting OR radio OR television OR films OR newspaper$ OR magazine$
4	ERIC	Environment$ OR health ADJ policy
5	ERIC	Legislation OR legislative
6	ERIC	Social marketing
7	ERIC	Mass-Media#.DE.
8	ERIC	Marketing#.W..DE.
9	ERIC	1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8
10	ERIC	fitness OR aerobic ADJ capacity OR activ$ OR walk$ OR yoga OR sedentary OR deskbound OR inactiv$ OR running OR jogging OR pilates OR yoga OR cycle OR cycling OR bicycl$ OR bike$ OR biking OR swim$ OR swimming OR rollerblading OR rollerskating OR skating OR exertion$ OR stair ADJ use OR active ADJ transport$
11	ERIC	Exercise#.W..DE. OR Exercise#.W..DE.

(*Continued*)

12	**ERIC**	**Physical-Activity-Level#.DE.**
13	**ERIC**	**Athletics#.W..DE.**
14	**ERIC**	**10 OR 11 OR 12 OR 13**
15	**ERIC**	**randomized OR randomised OR placebo OR randomly OR trial OR quasi-experiment$ OR pre ADJ test OR pretest OR posttest OR post ADJ test OR controlled ADJ trial OR time ADJ series OR controlled ADJ stud$ OR before AND after OR controlled ADJ before**
16	**ERIC**	**9 AND 14 AND 15**

EU Platform on Diet, Physical Activity and Health 23 November 2009 [0 hits]
http://www.eufic.org/page/en/health-and-lifestyle/physical-activity/

health-evidence.ca 25 November 2009 [5 hits]
Focus of review: Physical activity
Review type: systematic
Intervention location: City/Regional/Community
Strategy: Behaviour modification. Creating supportive environments

HMIC Health Management Information Consortium January 1995 to 9 November 2009 [308 records]

#	Searches
1	exp health promotion/
2	exp community health services/
3	(national adj (policy or policies or strateg$ or program$)).ti,ab
4	exp mass media/
5	cities/
6	rural population/ or rural health/
7	environmental planning.ti,ab.
8	social environment/ or social network/ or marketing/ or public relations/
9	urban health/
10	”health education“/

(*Continued*)

11	((state or county or town or city or village or nation*) adj2 (wide or whole or communit*)).ti,ab
12	((combined$ or multiple or multi or multifactorial or partner$) adj2 (program$ or strateg$ or intervention$ or organi?ation$)).ti,ab
13	(media intervention* or whole community or community intervention* or community organsai?ation$1).ti,ab
14	(community adj2 (design or action or program* or partner$)).ti,ab
15	((health or community or environment*) adj (policy or policies)).ti,ab
16	(urban design or "land use policies" or "land use policy").ti,ab
17	((transportation or travel) adj (policy or policies)).ti,ab.
18	health planning.ti,ab.
19	((neighbo?rhood* or city or cities or community) adj2 (development or regeneration or renewal or design* or plan* or polic*)).ti,ab
20	(community wide or community setting$ or community group$ or organi?ation$ level$1).ti,ab
21	(Communit$ adj2 base$).ti,ab.
22	((built environment* or urban environment* or environmental) adj (change* or intervention*)).ti,ab
23	(environment$ adj2 infrastructure).ti,ab.
24	(urban adj2 (regeneration or renewal or plan* or design* or policy or policies or strateg* or program$)).ti,ab
25	((media or advertising or radio or television or newspaper* or poster* or flyer* or "information booklet*") adj3 (information or education or campaign or intervention or strateg$ or program$ or policy or policies)).ti,ab
26	social marketing.ti,ab.
27	("point of decision" adj3 (stair* or travel*)).ti,ab.
28	(health counsel* or individual counsel*).ti,ab.
29	(community adj3 (collaborati* or coalition)).ti,ab.
30	((school* or work?place* or employer* or classroom or college) adj2 (strateg$ or program$ or policy or policies)).ti,ab
31	((public or community) adj2 (information or education or campaign or intervention or strateg$ or program$ or policy or policies)).ti,ab
32	(policy change* or fiscal change*).ti,ab.

(*Continued*)

33	(policy adj3 (interven$ or change or introduce$ or modif$ or alter$)).ti,ab
34	physical infrastructure.ti,ab.
35	((road or land) adj us*).ti,ab.
36	(Legislation or legislative).ti,ab.
37	((Voluntary or volunteer or charities or charity or non-government or government or "not for profit") adj2 (group$1 or organisation$ or department$1 or club$1)).ti,ab
38	or/1-37
39	exp exercise/ or exp physical activity/ or fitness/ or physical education/
40	running/
41	walking/
42	swimming/
43	(fitness adj class*).ti,ab.
44	gardening/
45	exp dancing/
46	exp sport/
47	exp yoga/
48	recreation/
49	(fitness adj (regime* or program*)).ti,ab.
50	cardiorespiratory fitness.ti,ab.
51	aerobic capacity.ti,ab.
52	((moderate or vigorous*) adj activ*).ti,ab.
53	(led walk* or health walk*).ti,ab.
54	(physical adj5 (fit* or train* or activ* or endur*)).ti,ab.
55	(exercis* adj5 (fit* or train* or activ* or endur*)).ti,ab.

(*Continued*)

56	((leisure or fitness) adj5 (centre* or center* or facilit*)).ti,ab
57	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 gym*).ti,ab
58	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 physical activ*).ti,ab
59	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 (circuit* or aqua*)).ti,ab
60	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 (exercis* or exertion or keep fit or fitness class or yoga or aerobic*)).ti,ab
61	((decreas* or reduc* or discourag*) adj5 (sedentary or deskbound or "physical* inactiv*")).ti,ab
62	sport*3.ti,ab.
63	walk*3.ti,ab.
64	running.ti,ab.
65	jogging.ti,ab.
66	pilates.ti,ab.
67	yoga.ti,ab.
68	((cycle or cycling) adj5 (school$ or work or workplace or commut$ or travel$ or equipment or facilit$ or rack$1 or store$1 or storing or park$ or friendly or infrastructure)).ti,ab
69	bicycl*.ti,ab.
70	(bike*1 or biking).ti,ab.
71	(swim*1 or swimming).ti,ab.
72	(exercis*3 adj5 aerobic*).ti,ab.
73	rollerblading.ti,ab.
74	rollerskating.ti,ab.
75	skating.ti,ab.
76	exertion*1.ti,ab.
77	strength training.ti,ab.
78	resilience training.ti,ab.

(*Continued*)

79	weight lifting.tw.
80	travel mode*1.tw.
81	(active adj (travel*4 or transport* or commut$)).tw.
82	(multimodal transportation or alternative transport* or alternative travel*).ti,ab
83	recreation*1.ti,ab.
84	("use" adj3 stair*).ti,ab.
85	(pedestrianis* or pedestrianiz*).ti,ab.
86	or/39-85
87	(randomized or randomised or placebo or randomly or trial).ab
88	Random allocation/ or clinical trial/ or single-blind method/ or double-blind method/ or control groups/ or evaluation/
89	quasi-experiment$.ti,ab.
90	(pre test or pretest or (posttest or post test)).ti,ab.
91	trial.ti.
92	(time adj series).ti,ab.
93	(pre test or pretest or (posttest or post test)).ti,ab.
94	((evaluat$ or intervention or interventional) adj8 (control or controlled or study or program$ or comparison or "before and after" or comparative)).ti,ab
95	((intervention or interventional) adj8 (effect* or evaluat* or outcome*)).ti,ab
96	((process or program*) adj3 (effect* or evaluat*)).ti,ab.
97	(controlled before or "before and after stud$" or follow up assessment).ti,ab
98	or/87-97
99	38 and 86 and 98
100	animals/ not (humans/ and animals/)
101	99 not 100

(*Continued*)

102	limit 101 to yr="1995-2009"

IUHPE (International Union for Health Promotion and Education) http://www.iuhpe.org 23 November 2009 [0 hits]
Browse

LILACS January 1995 to 13 November 2009 [416 hits]
Small cities or mass media or cities or health promotion
AND
Physical activity or physical fitness or exercise

MEDLINE January 1995 to 9 November 2009 [Medline/Medline in Process 5691 hits]

1. residence characteristics/
2. community health planning/
3. exp health promotion/
4. exp community health services/
5. (national adj (policy or policies or strateg* or program*)).ti,ab.
6. exp mass media/
7. community networks/
8. community health centers/
9. "marketing of health services"/
10. cities/
11. rural population/ or rural health/
12. urban population/
13. community-institutional relations/
14. exp environment design/
15. city planning/
16. environmental planning.ti,ab.
17. social environment/
18. urban health/
19. "health education"/
20. social marketing/
21. ((state or county or town or city or village or nation*) adj2 (wide or whole or communit*)).ti,ab.
22. ((combined* or multiple or multi or multifactorial or partner*) adj2 (program* or strateg* or intervention* or organi?ation*)).ti,ab.
23. (media intervention* or whole community or community intervention* or community organsai?ation*1).ti,ab.
24. (community adj2 (design or action or program* or partner*)).ti,ab.
25. ((health or community or environment*) adj (policy or policies)).ti,ab.
26. (urban design or "land use policies" or "land use policy").ti,ab.
27. ((transportation or travel) adj (policy or policies)).ti,ab.
28. health planning.ti,ab.
29. ((neighbo?rhood* or city or cities or community) adj2 (development or regeneration or renewal or design* or plan* or polic*)).ti,ab.
30. (community wide or community setting* or community group* or organi?ation* level*1).ti,ab.
31. (Communit* adj2 base*).ti,ab.
32. ((built environment* or urban environment* or environmental) adj (change* or intervention*)).ti,ab.
33. (environment* adj2 infrastructure).ti,ab.
34. (urban adj2 (regeneration or renewal or plan* or design* or policy or policies or strateg* or program*)).ti,ab.
35. ((media or advertising or radio or television or newspaper* or poster* or flyer* or "information booklet*") adj3 (information or education or campaign or intervention or strateg* or program* or policy or policies)).ti,ab.
36. social marketing.ti,ab.

37. ("point of decision" adj3 (stair* or travel*)).ti,ab.
38. (health counsel* or individual counsel*).ti,ab.
39. (community adj3 (collaborati* or coalition)).ti,ab.
40. ((school* or work?place* or employer* or classroom or college) adj2 (strateg* or program* or policy or policies)).ti,ab.
41. ((public or community) adj2 (information or education or campaign or intervention or strateg* or program* or policy or policies)).ti,ab.
42. (policy change* or fiscal change*).ti,ab.
43. (policy adj3 (interven* or change or introduce* or modif* or alter*)).ti,ab.
44. physical infrastructure.ti,ab.
45. ((road or land) adj us*).ti,ab.
46. (Legislation or legislative).ti,ab.
47. ((Voluntary or volunteer or charities or charity or non-government or government or "not for profit") adj2 (group*1 or organisation* or department*1 or club*1)).ti,ab.
48. or/1-47
49. exp exercise/
50. running/
51. walking/
52. physical fitness/
53. swimming/
54. (fitness adj class*).ti,ab.
55. gardening/
56. exp "physical education and training"/
57. exp dancing/
58. exp sports/
59. exp sport/
60. exp yoga/
61. exp fitness centers/
62. recreation/
63. "play and playthings"/
64. exp motor activity/
65. (fitness adj (regime* or program*)).ti,ab.
66. cardiorespiratory fitness.ti,ab.
67. aerobic capacity.ti,ab.
68. ((moderate or vigorous*) adj activ*).ti,ab.
69. (led walk* or health walk*).ti,ab.
70. (physical adj5 (fit* or train* or activ* or endur*)).ti,ab.
71. (exercis* adj5 (fit* or train* or activ* or endur*)).ti,ab.
72. ((leisure or fitness) adj5 (centre* or center* or facilit*)).ti,ab.
73. ((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 gym*).ti,ab.
74. ((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 physical activ*).ti,ab.
75. ((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 (circuit* or aqua*)).ti,ab.
76. ((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 (exercis* or exertion or keep fit or fitness class or yoga or aerobic*)).ti,ab.
77. ((decreas* or reduc* or discourag*) adj5 (sedentary or deskbound or "physical* inactiv*")).ti,ab.
78. sport*3.ti,ab.
79. walk*3.ti,ab.
80. running.ti,ab.
81. jogging.ti,ab.
82. pilates.ti,ab.
83. yoga.ti,ab.
84. ((cycle or cycling) adj5 (school* or work or workplace or commut* or travel* or equipment or facilit* or rack*1 or store*1 or storing or park* or friendly or infrastructure)).ti,ab.
85. bicycl*.ti,ab.

86. (bike*1 or biking).ti,ab.
87. (swim*1 or swimming).ti,ab.
88. (exercis*3 adj5 aerobic*).ti,ab.
89. rollerblading.ti,ab.
90. rollerskating.ti,ab.
91. skating.ti,ab.
92. exertion*1.ti,ab.
93. strength training.ti,ab.
94. resilience training.ti,ab.
95. weight lifting.tw.
96. travel mode*1.tw.
97. (active adj (travel*4 or transport* or commut*)).tw.
98. (multimodal transportation or alternative transport* or alternative travel*).ti,ab.
99. recreation*1.ti,ab.
100. ("use" adj3 stair*).ti,ab.
101. (pedestrianis* or pedestrianiz*).ti,ab.
102. or/49-101
103. randomized controlled trial.pt.
104. controlled clinical trial.pt.
105. (randomized or randomised or placebo or randomly or trial).ab.
106. Random allocation/ or clinical trial/ or single-blind method/ or double-blind method/ or control groups/
107. Intervention studies/
108. evaluation studies/
109. program evaluation/
110. Comparative study.pt.
111. quasi-experiment*.ti,ab.
112. (pre test or pretest or (posttest or post test)).ti,ab.
113. trial.ti.
114. (time adj series).ti,ab.
115. (pre test or pretest or (posttest or post test)).ti,ab.
116. ((evaluat* or intervention or interventional) adj8 (control or controlled or study or program* or comparison or "before and after" or comparative)).ti,ab.
117. ((intervention or interventional) adj8 (effect* or evaluat* or outcome*)).ti,ab.
118. ((process or program*) adj3 (effect* or evaluat*)).ti,ab.
119. (controlled before or "before and after stud*" or follow up assessment).ti,ab.
120. or/103-119
121. animals/ not (humans/ and animals/)
122. 120 not 121
123. 48 and 102 and 122
124. limit 123 to yr="1995-2009"

MEDLINE in process
As above

NCCHTA http://www.ncchta.org 23 November 2009 [1 hit]
Browsed using the words activity, exercise, sport and manual browse.

NICE http://www.nice.org.uk. 23 November 2009 [4 hits]
Reference lists of physical activity guidance browsed for all included references with a multi-component intervention.

PsycINFO January 2005 to 9 November 2009 [1315 hits]

#	Searches
1	exp health promotion/
2	(national adj (policy or policies or strateg$ or program$)).ti,ab
3	exp mass media/
4	cities/
5	environmental planning.ti,ab.
6	exp social environment/ or social network/
7	"health education"/
8	social marketing/ or marketing/ or public relations/
9	((state or county or town or city or village or nation*) adj2 (wide or whole or communit*)).ti,ab
10	((combined$ or multiple or multi or multifactorial or partner$) adj2 (program$ or strateg$ or intervention$ or organi?ation$)).ti,ab
11	(media intervention* or whole community or community intervention* or community organsai?ation$1).ti,ab
12	(community adj2 (design or action or program* or partner$)).ti,ab
13	((health or community or environment*) adj (policy or policies)).ti,ab
14	(urban design or "land use policies" or "land use policy").ti,ab
15	((transportation or travel) adj (policy or policies)).ti,ab.
16	health planning.ti,ab.
17	((neighbo?rhood* or city or cities or community) adj2 (development or regeneration or renewal or design* or plan* or polic*)).ti,ab
18	(community wide or community setting$ or community group$ or organi?ation$ level$1).ti,ab
19	(Communit$ adj2 base$).ti,ab.
20	((built environment* or urban environment* or environmental) adj (change* or intervention*)).ti,ab
21	(environment$ adj2 infrastructure).ti,ab.
22	(urban adj2 (regeneration or renewal or plan* or design* or policy or policies or strateg* or program$)).ti,ab

(*Continued*)

23	((media or advertising or radio or television or newspaper* or poster* or flyer* or "information booklet*") adj3 (information or education or campaign or intervention or strateg$ or program$ or policy or policies)).ti,ab
24	social marketing.ti,ab.
25	("point of decision" adj3 (stair* or travel*)).ti,ab.
26	(health counsel* or individual counsel*).ti,ab.
27	(community adj3 (collaborati* or coalition)).ti,ab.
28	((school* or work?place* or employer* or classroom or college) adj2 (strateg$ or program$ or policy or policies)).ti,ab
29	((public or community) adj2 (information or education or campaign or intervention or strateg$ or program$ or policy or policies)).ti,ab
30	(policy change* or fiscal change*).ti,ab.
31	(policy adj3 (interven$ or change or introduce$ or modif$ or alter$)).ti,ab
32	physical infrastructure.ti,ab.
33	((road or land) adj us*).ti,ab.
34	(Legislation or legislative).ti,ab.
35	((Voluntary or volunteer or charities or charity or non-government or government or "not for profit") adj2 (group$1 or organisation$ or department$1 or club$1)).ti,ab
36	or/1-35
37	exp exercise/ or exp physical activity/
38	running/
39	walking/
40	physical fitness/
41	swimming/
42	(fitness adj class*).ti,ab.
43	gardening/
44	exp sports/

(*Continued*)

45	exp yoga/
46	recreation/
47	(fitness adj (regime* or program*)).ti,ab.
48	cardiorespiratory fitness.ti,ab.
49	aerobic capacity.ti,ab.
50	((moderate or vigorous*) adj activ*).ti,ab.
51	(led walk* or health walk*).ti,ab.
52	(physical adj5 (fit* or train* or activ* or endur*)).ti,ab.
53	(exercis* adj5 (fit* or train* or activ* or endur*)).ti,ab.
54	((leisure or fitness) adj5 (centre* or center* or facilit*)).ti,ab
55	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 gym*).ti,ab
56	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 physical activ*).ti,ab
57	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 (circuit* or aqua*)).ti,ab
58	((promot* or uptak* or encourag* or increas* or start* or adher* or sustain* or maintain*) adj5 (exercis* or exertion or keep fit or fitness class or yoga or aerobic*)).ti,ab
59	((decreas* or reduc* or discourag*) adj5 (sedentary or deskbound or "physical* inactiv*")).ti,ab
60	sport*3.ti,ab.
61	walk*3.ti,ab.
62	running.ti,ab.
63	jogging.ti,ab.
64	pilates.ti,ab.
65	yoga.ti,ab.
66	((cycle or cycling) adj5 (school$ or work or workplace or commut$ or travel$ or equipment or facilit$ or rack$1 or store$1 or storing or park$ or friendly or infrastructure)).ti,ab
67	bicycl*.ti,ab.

(*Continued*)

68	(bike*1 or biking).ti,ab.
69	(swim*1 or swimming).ti,ab.
70	(exercis*3 adj5 aerobic*).ti,ab.
71	rollerblading.ti,ab.
72	rollerskating.ti,ab.
73	skating.ti,ab.
74	exertion*1.ti,ab.
75	strength training.ti,ab.
76	resilience training.ti,ab.
77	weight lifting.tw.
78	travel mode*1.tw.
79	(active adj (travel*4 or transport* or commut$)).tw.
80	(multimodal transportation or alternative transport* or alternative travel*).ti,ab
81	recreation*1.ti,ab.
82	("use" adj3 stair*).ti,ab.
83	(pedestrianis* or pedestrianiz*).ti,ab.
84	or/37-83
85	(randomized or randomised or placebo or randomly or trial).ab
86	Random allocation/ or clinical trial/ or single-blind method/ or double-blind method/ or control groups/
87	program evaluation/ or evaluation/
88	quasi-experiment$.ti,ab.
89	(pre test or pretest or (posttest or post test)).ti,ab.
90	trial.ti.
91	(time adj series).ti,ab.

(*Continued*)

92	(pre test or pretest or (posttest or post test)).ti,ab.
93	((evaluat$ or intervention or interventional) adj8 (control or controlled or study or program$ or comparison or "before and after" or comparative)).ti,ab
94	((intervention or interventional) adj8 (effect* or evaluat* or outcome*)).ti,ab
95	((process or program*) adj3 (effect* or evaluat*)).ti,ab.
96	(controlled before or "before and after stud$" or follow up assessment).ti,ab
97	or/85-96
98	36 and 84 and 97
99	animals/ not (humans/ and animals/)
100	98 not 99
101	limit 100 to yr="1995-2009"

SIGN http://www.sign.ac.uk 25 November 2009 [0 hits]
Browse

Sociological Abstracts January 1995 to 13 November 2009 [874 hits]
Search Query #79 ((DE=("**communities**" or "**alternative communities**" or "**kibbutzim**" or "**gated communities**" or "**ghettoes**" or "**local communities**" or "**master planned communities**" or "**mining communities**" or "**religious communities**" or "**base ecclesial communities**" or "**christian communities**" or "**amish communities**" or "**anglican religious communities**" or "**mennonite communities**" or "**roman catholic communities**" or "**jewish communities**" or "**haredim communities**" or "**hassidic communities**" or "**monastic communities**" or "**muslim communities**" or "**sikh communities**" or "**zoroastrian communities**" or "**retirement communities**" or "**rural communities**" or "**isolated communities**" or "**slum communities**" or "**smeltering communities**" or "**virtual communities**")) or(DE=("**community agencies**" or "**community based**" or "**community based action research**")) or(DE=("**community based redevelopment**" or "**community based action research**" or "**community based preventive programmes**" or "**community based programmes**")) or(DE=("**community based research**" or "**community based action research**")) or(DE=("**health promotion**" or "**mental health promotion**" or "**sexual health promotion**")) or(DE=("**mass media**" or "**advertisements**" or "**personal advertisements**" or "**posters**" or "**broadcasting**" or "**radio**" or "**local radio**" or "**religious broadcasting**" or "**television**" or "**animation**" or "**cable television**" or "**closed circuit television**" or "**commercial television**" or "**digital television**" or "**interactive television**" or "**live television**" or "**local television**" or "**satellite television**" or "**films**" or "**documentary films**" or "**educational films**" or "**erotic films**" or "**gangster films**" or "**horror films**" or "**silent films**" or "**suspense films**" or "**war films**" or "**western films**" or "**newspapers**" or "**electronic newspapers**" or "**student newspapers**" or "**tabloid newspapers**" or "**periodicals**" or "**academic journals**" or "**children s magazines**" or "**comics**" or "**consumer magazines**" or "**dialogue journals**" or "**farming magazines**" or "**fashion magazines**" or "**feminist periodicals**" or "**literary journals**" or "**medical journals**" or "**men s magazines**" or "**popular magazines**" or "**women s magazines**" or "**problem pages**" or "**young people s magazines**" or "**young women s magazines**" or "**press**" or "**local press**")) or(DE="**mass campaigns**") or(DE="**social marketing**") or(KW=((**state** or **county** or **town** or **city** or **village** or **nation***) and (**wide** or **whole** or **communit***))) or(KW=(**media intervention*** or **whole community** or **community intervention*** or **community organsai? ation***)) or(KW= (**community** and (**design** or **action** or **program*** or **partner***))) or(KW= ((**health** or **community** or **environment***) and (**policy** or **policies**))) or(KW= (**urban design** or "**land use policies**" or "**land use policy**")) or(KW= ((**transportation** or **travel**) and (**policy** or **policies**))) or(KW=**health planning**) or(KW= ((**neighbo?rhood*** or **city** or **cities** or **community**) and (**development** or

regeneration or **renewal** or **design*** or **plan*** or **polic***))) or(KW= (**community wide** or **community setting*** or **community group*** or **organi?ation* level***)) or(KW= (**Communit* base***)) or(KW= ((**built environment*** or **urban environment*** or **environmental**) and (**change*** or **intervention***))) or(KW= **environment* infrastructure**) or(KW= (**urban** and (**regeneration** or **renewal** or **plan*** or **design*** or **policy** or **policies** or **strateg*** or **program***))) or(KW= ((**media** or **advertising** or **radio** or **television** or **newspaper*** or **poster*** or **flyer*** or "**information booklet***") and (**information** or **education** or **campaign** or **intervention** or **strateg*** or **program*** or **policy** or **policies**))) or(KW=**social marketing**) or(KW= ("**point of decision**" **adj3** (**stair*** or **travel***))) or(KW= (**health counsel*** or **individual counsel***)) or(KW= (**community** and (**collaborati*** or **coalition**))) or(KW= ((**school*** or **work?place*** or **employer*** or **classroom** or **college**) and (**strateg*** or **program*** or **policy** or **policies**))) or(KW= ((**public** or **community**) and (**information** or **education** or **campaign** or **intervention** or **strateg*** or **program*** or **policy** or **policies**))) or(KW= (**policy change*** or **fiscal change***)) or(KW= (**policy** and (**interven*** or **change** or **introduce*** or **modif*** or **alter***))) or(KW=**physical infrastructure**) or(KW= ((**road** or **land**) and **us***)) or(KW= (**Legislation** or **legislative**)) or(KW= ((**Voluntary** or **volunteer** or **charities** or **charity** or **non-government** or **government** or "**not for profit**") and (**group***1 or **organisation*** or department*1 or club*1)))) and((DE=("**exercise**" or "**aerobic exercise**" or "**dance exercise**" or "**fitness training**" or "**pelvic floor exercise**" or "**structured exercise**" or "**tai chi**" or "**water exercise**" or "**weight training**" or "**weightlifting**" or "**yoga**" or "**hatha yoga**" or "**sahaja yoga**")) or(DE=("**physical fitness**" or "**exercise**" or "**aerobic exercise**" or "**dance exercise**" or "**fitness training**" or "**pelvic floor exercise**" or "**structured exercise**" or "**tai chi**" or "**water exercise**" or "**weight training**" or "**weightlifting**" or "**yoga**" or "**hatha yoga**" or "**sahaja yoga**")) or(KW= (**fitness adj class***)) or(KW= (**fitness adj** (**regime*** or **program***))) or(KW=**cardiorespiratory fitness**) or(KW=**aerobic capacity**) or(KW= ((**moderate** or **vigorous***) and **activ***)) or(KW= (**led walk*** or **health walk***)) or(KW= (**physical** and (**fit*** or **train*** or **activ*** or **endur***))) or(KW= (**exercis*** and (**fit*** or **train*** or **activ*** or **endur***))) or(KW= ((**leisure** or **fitness**) and (**centre*** or **center*** or **facilit***))) or(KW= ((**promot*** or **uptak*** or **encourag*** or **increas*** or **start*** or **adher*** or **sustain*** or **maintain***) and **gym***)) or(KW= ((**promot*** or **uptak*** or **encourag*** or **increas*** or **start*** or **adher*** or **sustain*** or **maintain***) and **physical activ***)) or(KW= ((**promot*** or **uptak*** or **encourag*** or **increas*** or **start*** or **adher*** or **sustain*** or **maintain***) and (**circuit*** or **aqua***))) or(KW= ((**promot*** or **uptak*** or **encourag*** or **increas*** or **start*** or **adher*** or **sustain*** or **maintain***) and (**exercis*** or **exertion** or **keep fit** or **fitness class** or **yoga** or **aerobic***))) or(KW= ((**decreas*** or **reduc*** or **discourag***) and (**sedentary** or **deskbound** or "**physical* inactiv***"))) or(KW=**sport*** or **walk*** or **running** or **jogging** or **pilates** or **yoga**) or(KW= ((**cycle** or **cycling**) and (**school*** or **work** or **workplace** or **commut*** or **travel*** or **equipment** or **facilit*** or rack*1 or store*1 or **storing** or **park*** or **friendly** or **infrastructure**))) or(KW=**bicycl*** or **bike*** or **biking** or **swim*** or **swimming**) or(KW= (**aerobic* exercise***)) or(KW=**rollerblading** or **rollerskating** or **skating** or **exertion*** or "**strength training**" or "**resilience trainig**" or "**weight lifting**") or(KW=**travel mode***) or(KW= (**active adj** (**travel*** or **transportation** or **commut***))) or(KW= (**multimodal transportation** or **alternative transport*** or **alternative travel***)) or(KW=**recreation***) or(KW= (**use** and **stair***)) or(KW= (**pedestrianis*** or **pedestrianiz***))) and((DE=("**randomized controlled trials**" or "**clinical randomized controlled trials**" or "**cluster randomized controlled trials**" or "**double blind randomized controlled trials**" or "**randomized consent design**" or "**single blind randomized controlled trials**" or "**urn randomization**")) or(DE="**comparative studies**") or(DE="**evaluative research**") or(KW= (**randomized** or **randomised** or **placebo** or **randomly** or **trial**)) or(KW=**quasi-experiment***) or(KW= (**pre test** or **pretest** or (**posttest** or **post test**))) or(KW=**trial**) or(KW= **time series**) or(KW= (**pre test** or **pretest** or (**posttest** or **post test**))) or(KW= ((**evaluat*** or **intervention** or **interventional**) and (**control** or **controlled** or **study** or **program*** or **comparison** or "**before and after**" or **comparative**))) or(KW= ((**intervention** or **interventional**) and (**effect*** or **evaluat*** or **outcome***))) or(KW= ((**process** or **program***) and (**effect*** or **evaluat***))) or(KW= ("**controlled before**" or "**before and after stud***" or "**follow up assessment**")))

SPORTDiscus January 1995 to 23 November 2009 [365 hits]
((active or activity) adj5 (transport$1 or transportation or journey$)).tw.
((active or activity) adj5 travel$).tw.
(travel$ adj5 (bike$ or walk$ or biking or cycle or cycling or bicycl$ or mode$1 or route$ or pattern$1 or plan$1 or planning or rollerblad$ or skateboard$ or scooter$ or rollerskat$)).tw.
((transport$1 or transportation) adj5 (bike$ or walk$ or biking or cycle or cycling or bicycl$ or mode$1 or route$ or pattern$1 or plan$1 or planning or rollerblad$ or skateboard$ or scooter$ or rollerskat$)).tw.
(journey$ adj5 (bike$ or walk$ or biking or cycle or cycling or bicycl$ or mode$1 or rollerblad$ or skateboard$ or scooter$ or rollerskat$ or route$ or pattern$1 or plan$1 or planning)).tw.
(commut$ adj5 (bike$ or walk$ or biking or cycle or cycling or bicycl$ or mode$1 or route$ or pattern$1 or plan$1 or planning rollerblad$ or skateboard$ or scooter$ or rollerskat$)).tw.
(school$ adj5 (bike$ or walk$ or biking or cycle or cycling or bicycl$ or route$ or rollerblad$ or skateboard$ or scooter$ or rollerskat$)).tw.
((biking or cycle or cycling or bicycl$ or walk or walking or walks) adj1 route$).tw.
(road adj3 (safety or awareness or education or training)).tw.

((bike or biking or cycling or bicycl$ or walk or walking) adj1 (bus or buses)).tw.
And
(local authorit$ or local council$ or health authorit$).tw.
(council$ adj2 (provision or facilit$ or service$)).tw.
public facilities/ or swimming pools/
Local government/
(County council$ or borough council$).tw.
(communit$ or settings).tw.
(neighbourhood$ or neighborhood$).tw.

Tris Online January 1995 to 23 November 2009 [13 hits]
((kw:journey* OR kw:travel* OR kw:transport* OR kw:commut*)) AND (kw:community*))

Web of Science: Science Citation Index & Social Science Citation Index & Conference Proceedings Citation Index January 1995 to 13 November 2009 [9.108 hits]
TS=((**state** or **county** or **town** or **city** or **village** or **nation***) AND (**wide** or **whole** or **communit***))
TS=(**media intervention*** OR **whole community** OR **community intervention*** OR **community organisation***)
TS=(**community** AND (**design** OR **action** OR **program*** OR **partner***))
TS=((**health** OR **community** OR **environment***) AND (**policy** OR **policies**))
TS=((**urban design** OR "**land use policies**" OR "**land use policy**" OR **transportation** OR **travel**) AND (**policy** OR **policies**))
TS=(**health planning)**
TS=((**neighbo?rhood*** OR **city** OR **cities** OR **community**) AND (**development** OR **regeneration** OR **renewal** OR **design*** OR **plan*** OR **polic***))
TS=(**community wide** OR **community setting*** OR **community group*** OR **organi?ation*** **level*** OR **Communit*** **base***)
TS=((**built environment*** OR **urban environment*** OR **environmental**) AND (**change*** OR **intervention***))
TS=**environment* infrastructure**
TS=(**urban** AND (**regeneration** OR **renewal** OR **plan*** OR **design*** OR **policy** OR **policies** OR **strateg*** OR **program***))
TS=((**media** OR **advertising** OR **radio** OR **television** OR **newspaper*** OR **poster*** OR **flyer*** OR "**information booklet***") AND (**information** OR **education** OR **campaign** OR **intervention** OR **strateg*** OR **program*** OR **policy** OR **policies**))
TS=**social marketing**
TS=("**point of decision**" **and** (**stair*** OR **travel***))
TS=(**health counsel*** OR **individual counsel***)
TS=(**community** AND (**collaborati*** OR **coalition**))
TS=((**school*** OR **work?place*** OR **employer*** OR **classroom** OR **college**) AND (**strateg*** OR **program*** OR **policy** OR **policies**))
TS=((**public** OR **community**) AND (**information** OR **education** OR **campaign** OR **intervention** OR **strateg*** OR **program*** OR **policy** OR **policies**))
TS=(**policy change*** OR **fiscal change***)
TS=(**policy** AND (**interven*** OR **change** OR **introduce*** OR **modif*** OR **alter***))
TS=(**physical infrastructure**)
TS=((**road** OR **land**) AND (**us**e or usage))
TS=(**Legislation** OR **legislative**)
TS=((**Voluntary** OR **volunteer** OR **charities** OR **charity** OR **non-government** OR **government** OR "**not for profit**") AND (**group*** OR **organisation*** OR department* OR club*))
AND
TS=(**exercise** OR **physical fitness** OR sport* OR **fitness class***)
TS=(**fitness AND** (**regime*** OR **program***))
TS=(**cardiorespiratory fitness** OR **aerobic capacity**)
TS=((**moderate** OR **vigorous***) AND **activ***)
TS=(**led walk*** OR **health walk***)
TS=(**physical** AND (**fit*** OR **train*** OR **activ*** OR **endur***))
TS=(**exercis*** AND (**fit*** OR **train*** OR **activ*** OR **endur***))
TS=((**leisure** OR **fitness**) AND (**centre*** OR **center*** OR **facilit***))
TS=((**promot*** OR **uptak*** OR **encourag*** OR **increas*** OR **start*** OR **adher*** OR **sustain*** OR **maintain***) AND **gym***)

TS=((**promot*** OR **uptak*** OR **encourag*** OR **increas*** OR **start*** OR **adher*** OR **sustain*** OR **maintain***) AND **physical activ***)
TS=((**promot*** OR **uptak*** OR **encourag*** OR **increas*** OR **start*** OR **adher*** OR **sustain*** OR **maintain***) AND (**circuit*** OR **aqua***))
TS=((**promot*** OR **uptak*** OR **encourag*** OR **increas*** OR **start*** OR **adher*** OR **sustain*** OR **maintain***) AND (**exercis*** OR **exertion** OR **keep fit** OR **fitness class** OR **yoga** OR **aerobic***))
TS=((**decreas*** OR **reduc*** OR **discourag***) AND (**sedentary** OR **deskbound** OR "**physical* inactiv***"))
TS=(**sport*** OR **walk*** OR **running** OR **jogging** OR **pilates** OR **yoga**)
TS=((**cycle** OR **cycling**) AND (**school*** OR **work** OR **workplace** OR **commut*** OR **travel*** OR **equipment** OR **facilit*** OR rack* OR store* OR **storing** OR **park*** OR **friendly** OR **infrastructure**))
TS=(**bicycl*** OR **bike*** OR **biking** OR **swim*** OR **swimming** OR **aerobic* exercise*** OR **rollerblading** OR **rollerskating** OR **skating** OR **exertion*** OR "**strength training**" OR "**resilience training**" OR "**weight lifting**" OR **travel mode***)
TS=(**active AND** (**travel*** OR **transport*** OR **commut***))
TS=(**multimodal transportation** OR **alternative transport*** OR **alternative travel*** OR r**ecreation*** OR **pedestrianis*** OR **pedestrianiz***)
TS=(**use** AND **stair***)
AND
TS=(randomized OR randomised OR placebo OR randomly OR trial OR quasi-experiment* OR pre test OR pretest OR posttest OR post test OR controlled trial OR time series OR controlled stud* OR controlled before)
TS=(before and after)
US Centres for Disease Control and Prevention http://www.cdc.gov/ 25 November 2009 [0 hits]
Browse
World Health Organisation http://www.who.int/en/ 25 November 2009 [1 hit]
Browse

HISTORY

Protocol first published: Issue 2, 2010

Review first published: Issue 4, 2011

CONTRIBUTIONS OF AUTHORS

PB and DF were responsible for the primary conceptualisation of the review. The draft of the protocol and review was written in accordance with a project plan by all authors. PB led the development of the writing of the protocol and both PB and DF the review.

PB assessed risk of bias extracted data for all studies meeting the inclusion Criteria. DF, JS and CF shared independent completion of risk of bias assessment and data extraction forms.

PB and DF developed the criteria and independently assessed the intensity of intervention. They shared the management and analysis of the numerical data. CF and JS also contributed to the analysis of the data.

ALW contributed to the design of the protocol, developed the search strategy, ran the majority of electronic database searches and de-duplicated the results, unpicked systematic reviews and guidelines for relevant primary studies, and commented on the review.

Disclaimer

The findings and conclusions of this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention, Queensland Health or other institutions of affiliation.

DECLARATIONS OF INTEREST

None to declare

SOURCES OF SUPPORT

Internal sources

- Health Practitioner Research Scheme 2009 - 2010: Queensland Health, Australia.

$29,000 Australian was provide as a research fellowship supporting the reviewers PB and DF.

External sources

- National Institute for Health Research, Cochrane Review Incentive Scheme, UK.

5000 p ounds sterling for publication of the review by a set deadline (4 February 2011)

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

In the review, we did not specifically list 'historically controlled studies' as an included study design, given that these studies would be included already as interrupted-time series. Otherwise, all studies were required to have a contemporary control. Planned analyses which were not required or appropriate are described in the methods section.

In the protocol we had not envisaged the important differences in baseline between intervention and control group for a number of studies. Given these differences we calculated several addition effect measures as discussed in the methods section, in consultation with statisticians.

INDEX TERMS

Medical Subject Headings (MeSH)

*Exercise; *Program Development; Cities; Cultural Characteristics; Health Plan Implementation [*methods]; Health Promotion [*methods]

MeSH check words

Humans