REPORT

OCTOBER 2001

Young People and Physical Activity:

A systematic review of research on barriers and facilitators

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This report should be cited as:
Rees R, Harden A, Shepherd J, Brunton G, Oliver S, Oakley A (2001) *Young People and Physical Activity: A systematic review of research on barriers and facilitators*. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

Acknowledgements

We would like to acknowledge the invaluable help of Amanda Nicholas, Salma Master, Elaine Hogan and James Thomas at the EPPI-Centre for support and helpful advice throughout the preparation and write up of this report and Chris Bonell, Jo Garcia and Dina Kiwan for extracting data from some studies reviewed in depth.

The Department of Health, England, funds a specific programme of health promotion work at the EPPI-Centre.

ISBN: 0-9548415-3-0

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PREFACE

Scope of this report

This systematic review has synthesised the research evidence to assess what is known about the barriers to, and facilitators of, participation in physical activity amongst young people (aged 11 to 16) with a view to making recommendations about how it can be promoted. There are many useful messages contained within the review for policy-makers, commissioners, practitioners and researchers who have a remit to promote or conduct research on, physical activity amongst young people. In particular, the key messages of this review can help:

- health and other services to assess the evidence-base for delivering the preventive aspects of the National Service Framework for Coronary Heart Disease in this population group;

- schools, local education authorities, local authorities and health services involved in achieving the National Healthy School Standard for the theme of physical activity;

- schools, local education authorities, local authorities and health services involved in planning and developing interventions to promote safe and active travel to school;

- local authorities in developing interventions for creating opportunities for participation in active recreation; and

- services to support the NHS's commitment to involving the public in the development and delivery of services (DoH, 1999a).

Since part of the reviewing process involved assessing the amount and quality of the evidence available to services to help them promote physical activity, this review also:

- outlines a future research agenda for promoting young people's participation in physical activity; and

- makes recommendations for how this research may best be conducted.

Promoting physical activity is necessarily part of the remit of a range of public services and their partners. Because of this, difficult decisions were taken to focus effort on particular areas in order to complete the review within the time available. To ensure that this process still resulted in a useful review, it was commissioned in two stages: a mapping stage to describe the characteristics (but not the findings) of all the relevant research literature; and an in-depth review stage which synthesised the findings of a sub-set of this literature. The results and key messages to come out of both of these stages are presented in this report.

A range of research designs can illuminate the barriers to, and facilitators of, physical activity amongst young people. Relevant literature was considered to fall into two main types:

- *intervention studies* which can provide valuable information about barriers and facilitators, aside from answering questions about effectiveness; and

- *other studies* which aim to describe the factors influencing young people's participation in physical activity in a positive or negative way.

The sub-sets of literature reviewed in-depth were chosen in consultation with policy-makers at the Department of Health, and the EPPI-Centre Steering Group, a group representing health promotion policy-makers, practitioners and researchers.

The focus of the in-depth review was:

- studies which evaluate interventions targeting barriers and facilitators at a community or society level (e.g. those which aim to make a change to young people's social or physical environment to support them in increasing their levels of participation in physical activity); and

- other studies which elicit the views of young people on what they think are the barriers to, and facilitators of, their participation in physical activity and on what should be done to promote it.

This means that intervention studies which only target psychological barriers and facilitators and other studies which seek to describe young people's lives (rather than seeking young people's *own* descriptions of their lives) are not featured in our in-depth review. However, these studies have been catalogued and described in our mapping exercise and provide the wider context for the findings of this review.

How to read this report

Because this review is a *systematic* review, and uses explicit and rigorous methods to synthesise the evidence in this topic area, the report is necessarily lengthy. Complexity and length have also been increased because the review synthesises evidence from 'qualitative' research together with experimental evaluations of interventions, something that traditional systematic reviews do not do. Some readers will be interested in the whole review to get an overall picture of not only the findings of the review, but also how we came to those findings. Others will want to be directed to the parts most relevant to their needs. The following will help readers to make these decisions.

All readers are advised to read the **executive summary**. This gives an overall picture of what the review found out about the barriers to, and facilitators of, physical activity. It ends with explicit recommendations for:

- the types of interventions which have been demonstrated (through high quality evaluations) to have positive effects for promoting physical activity amongst young people (and the types which have NOT been shown to be effective);

- the development of future physical activity promotion (i.e. those interventions which look promising but need to be developed and tested further; the kinds of interventions which have not yet been evaluated);

- involving young people in developing and evaluating physical activity promotion; and

- how to best evaluate interventions to promote physical activity.

Taken together, these recommendations emphasise the need for different readers to work in partnership with each other to build on the current evidence-base. A fuller description of the recommendations, explaining clearly how they have been derived, are given in Chapter 9.

The individual chapters flesh out in more detail the above sections. As a quick guide to these chapters, readers who want:

- ***detailed information on effective interventions and how to implement them*** (e.g. practitioners, service commissioners, policy specialists) may be most interested in **chapter 5** (especially 'which interventions are effective' in section 5.4) and **chapter 7** which illustrates whether/how these interventions match young people's views on the barriers to, and facilitators of, their participation in physical activity.

- ***details of the views of young people on physical activity and how it might be promoted*** (e.g. practitioners, service commissioners, policy specialist, researchers) may be most interested in reading **chapter 6** (especially section 6.5) and **chapter 7**. Chapter 6 describes the findings of studies which elicit young people's views, while chapter 7 compares young people views on physical activity promotion to the kinds of things that have been evaluated.

- ***guidance on the kinds of interventions they should be developing and testing further and why*** in partnership with a range of stakeholders (e.g. practitioners, service commissioners, policy specialists, researchers, research commissioners) may be most interested in reading **chapter 7**, **chapter 8** and **chapter 9**.

- ***a discussion of how the findings of the review relate to current policy and practice in physical activity promotion*** may be interested in reading **chapter 8**.

- ***to find examples of physical activity promotion not covered in the in-depth review*** see **chapter 3**.

- ***guidance on how best to evaluate the effectiveness of physical activity promotion*** may be most interested in **section 8.5** of **chapter 8** and **9.4** of **chapter 9**.

- ***guidance on how best to involve young people in the development of physical activity promotion*** may be most interested in reading **section 8.5** of **chapter 8**.

- ***details on the amount and quality*** of research conducted on the topic of young people and physical activity (e.g. researchers, research commissioners) may be most interested to read **chapters 3, 5** and **6**.

- ***to know in detail about the methods used in this systematic review*** should read **chapter 2** and **chapter 4**. A reflection on the methods used in the review is also contained in **chapter 8**.

EXECUTIVE SUMMARY

The focus of this report is physical activity among young people. It aims to provide a systematic review of the research literature pertaining to the barriers to, and facilitators of, physical activity amongst young people, especially those from socially excluded groups. It is the second report in a series of reviews collating the evidence on the barriers to, and facilitators of, health behaviour change and attitudes to risk and risk-taking amongst young people. This series of reviews covers three topic areas: mental health, physical activity and healthy eating. An integrated report will bring together the findings from the three areas.

Physical activity promotion is high on the health policy agenda in the UK. Evidence regarding increased prevalence of obesity and inactivity amongst young people in the UK is mounting. Whilst promoting physical activity is an important goal in its own right, young people are a particularly important group, as poor levels of physical activity have been linked to other behaviours which are damaging to health and are linked with low levels of physical activity in adulthood. Participation in physical activity by young people is compounded by material and social context, with those at greatest risk of inactivity belonging to groups which are considered to be 'socially excluded'. While this has been known for some time, much less is known about how different social factors interact, and about where and how to intervene successfully.

Methods

Literature searches were undertaken to identify studies examining barriers to, and facilitators of, physical activity amongst young people aged 11 to 16. Because of the overlap between physical activity and healthy eating in many studies, we conducted an integrated search for both literatures. This report focuses on the findings for physical activity; the next report looks at healthy eating. We sought evaluations of health promotion interventions examining outcomes ('outcome evaluations') and systematic reviews carried out in any country from around the world. We also sought evaluations looking at the processes involved with these interventions ('process evaluations') and non-intervention research carried out in the UK. The review was restricted to studies in the English language and to those studies focused on the primary promotion of physical activity. It was carried out in two stages: a mapping and quality screening exercise; and an in-depth review of particular sets of studies.

Results

Mapping and quality screening results

The searches produced a substantial amount of potentially relevant literature – 614 citations (including both physical activity and healthy eating). Of these, 186 reports were deemed to meet our inclusion criteria and were available within the relevant time frame. A total of 90 individual studies focused on physical activity. All these studies were included in the mapping and quality screening exercise. There were 42 intervention studies (outcome and process evaluations), 41 reports of 'non-intervention' research, and 7 systematic reviews.

Only 28% (18) of the 90 physical activity studies identified in the mapping appear to address issues of social exclusion, with all but one of the studies that involve participants from ethnic minorities or with low incomes originating outside of the UK. Almost three-quarters of evaluated interventions were implemented primarily by teachers in school settings, potentially missing a large proportion of socially excluded young people.

Just under a quarter of the 42 intervention studies identified in the mapping evaluated interventions that addressed barriers to, and facilitators of, physical activity solely at an individual level. The remainder were split evenly into those studies that addressed community level factors (factors working at the family or inter-personal level), those that addressed societal factors, such as socio-cultural influences or structural circumstances, and those in which it was not possible to identify the authors' conceptualisation of influential factors.

Thirty-eight of the 42 intervention studies were outcome evaluations. Over 80% of these had a controlled trial design. Just over half were randomised-controlled trials. Using the reporting of equivalent intervention and control groups and both pre- and post-test data as measures of methodological soundness (as in previous reviews in this series), just under three-quarters were judged to be "potentially sound". The reporting of study methods was highly variable for the non-intervention studies in the mapping, with details of sample numbers, age and sex each provided in over 80% of cases, but ethnic group or socio-economic background each reported in less than a quarter.

In-depth review: results from outcome evaluations

Twelve outcome evaluations met the criteria for in-depth review. These were potentially sound and they evaluated the effect on health behaviour or health status of interventions aiming to make changes at the community or society level. One of these was conducted in the UK. Only four of these studies, following detailed data extraction, were judged to be methodologically sound (with an equivalent control or comparison group and presenting pre- and post- intervention data for all participants as recruited into the study and data on all the outcomes as stated in the aims of the study). The most common problem with those studies judged not to be sound was a failure to provide data that described the study groups prior to intervention.

In addition to promoting physical activity in itself, the interventions evaluated in these twelve studies also targeted cardiovascular disease, tobacco use, accidents, obesity, alcohol and illicit drug use. The majority were based in primary and secondary school settings and were delivered by teachers. While most interventions involved some form of information provision alongside participation in physical activities, seven of the twelve also involved attempts to make structural changes to young people's physical environments. Five also trained parents in or about physical activity. Five developed health screening resources. Three provided feedback to young people on biological measures and their behavioural risk status. Two provided social support systems for young people or others in the community. Five of the interventions were based around theories of social learning.

The twelve studies had little to say about social exclusion, with only three specifically recruiting ethnic minorities, all in the USA. In the one UK outcome evaluation reviewed in-depth, up to 20% of the study population were Asian.

Young people, on the whole, were not involved in developing these interventions. Two studies described how young people helped develop components of interventions (selecting music for aerobics classes and creating an educational video). Two described how young people participated in focus groups to identify aspects of physical activity that needed to be addressed.

Of the four outcome evaluations judged methodologically sound, one was conducted in the UK, three in the USA. The UK-based intervention was an award scheme (the 'Wessex Healthy Schools Award') that sought to make health-promoting changes in school ethos, organisational functioning and curriculum. Changes made in schools included the introduction of health education curricula, as well as the setting of targets in key health promotion areas (including physical activity). In the USA based 'Slice of Life' intervention, peer leaders taught ten sessions covering the benefits of fitness, healthy diets, and issues concerning weight control. School functioning was addressed by student recommendations to schools' administrators. Also in the USA, the cardiovascular risk reduction programme, 'Know Your Body', was evaluated separately in two districts of New York (The Bronx and Westchester). The intervention, which lasted for five years, comprised teacher-led classroom education, parental involvement activities, and risk factor examination in elementary and junior high schools.

From the reports available, the reviewers judged the 'Wessex Healthy Schools Award' programme to be effective for reported behaviour, but only among older young women (aged 15-16 years). It was judged ineffective for health promotion activity, organisation and functioning in schools. A process evaluation involving school staff showed that they considered barriers to achieving a healthy school to include lack of time and resources, and poor facilities. Facilitators included the commitment of the staff, support from management, staff concern for pupils' health, and pupils' own awareness of health.

The 'Slice of Life' intervention was judged to have no effect on the uptake of physical activity, for either sex. The process evaluation of this intervention suggested that having peers deliver training was acceptable to students and the peer-trainers themselves. It was also felt that the peer leaders were adequately trained for their role as educators. It appeared, however, that female students enjoyed the intervention more than did the male students.

The 'Know Your Body' intervention increased knowledge but was only partially effective in reducing cholesterol levels and blood pressure and inducing favourable dietary fat and carbohydrate intake. In the Bronx evaluation many of the changes were not statistically significant, and in the Westchester County evaluation the reviewers judged the effects to be unclear.

In-depth review: results from studies examining young people's views

A total of 16 studies of young people's views were reviewed in-depth. Two of these met all seven of the review's criteria for methodological quality (explicit and clear description of (i) theoretical framework and/ or literature review; (ii) study aims; (iii) study context; (iv) sample used and sampling methods; (v) data collection and analysis methods; and (vi) attempts made to establish the reliability and/or validity of the data analysis; and (vii) inclusion of sufficient

original data to mediate between data and interpretation). Description of sampling methods, the presentation of an explicit theoretical framework or literature review and the use of methods to establish the reliability or validity of data analysis were the most problematic areas.

It was unclear how applicable the findings of the studies of young people's views are for socially excluded young people. Details of participants' socio-economic and ethnic background, for example, were frequently lacking. Two of the studies involved young people from primarily working-class backgrounds but 11 out of the 16 said nothing about socio-economic background. The ethnicity of the sample was unstated in 63% of the studies. Furthermore, most studies collected data from young people in mainstream schools, and may therefore not be applicable to young people who infrequently or never attend school.

Most of the studies of young people's views asked them for their perceptions of physical activity in general, and what they think stops them taking part. Only six of the 16 looked at what helps participation. Only five studies directly asked young people what they thought could be done to promote physical activity.

The vast majority of the young people responding saw physical activity as beneficial. It was thought to increase health and fitness, help develop new skills and create opportunities for socialising and enjoyment. Young women particularly valued the role of physical activity in maintaining weight and a toned figure. Young women and inactive young men disliked competitive exercise.

There were differences in perception between the sexes. Unlike young women, young men found physical activity fitted well in their leisure time. Similarly, young men described physical activity as part of their identity as a male. Two studies specifically examined young women’s perceptions of their own femininity and found these to be in conflict with their attempts to be physically active.

Barriers to physical activity could be categorised into those related to the self, other people, practical and material resources/circumstances and the school. Related to the self and other people, among young women's accounts in particular, were feelings of incompetence, fears of looking stupid in front of others, inertia, a lack of motivation, conflicting interests, self-consciousness and constraints associated with parents and boyfriends.

Barriers highlighted in relation to practical and material resources were lack of time, money, transport and facilities for storing bikes. In terms of school, many young people held negative perceptions of physical education. In addition to general concerns over lack of choice and consultation over PE activities, young women identified barriers due to PE facilities and rules, such as inadequate changing and showering facilities, a lack of time for changing, and unacceptable gym kits such as short skirts. They also identified negative and insensitive behaviour from school PE teachers.

In terms of facilitators for participation in physical activity, in addition to a range of issues to do with the self (e.g. having a chance to show off skills, social benefits, help with losing weight) young people identified parental and friends' support as helpful. Their ideas for promoting physical activity, included increasing or modifying practical and material resources, such as creating

more cycle lanes, making activities more affordable, increasing access to clubs for dancing, and combining sports with leisure facilities. Young people suggested emphasising the fun and social aspects of physical activity, rather than the physical benefits. Many young women wanted more 'non-traditional' activities to choose from, which would be acceptable to them and fit in with their lifestyle.

Synthesis across study types

A synthesis across study types found there to be some matches but also significant mismatches between, on the one hand, what young people say are barriers to their participation in physical activity, what helps them and what could or should be done and, on the other, soundly evaluated interventions that address these potential barriers and facilitators.

Young people's concerns over the school environment may have been addressed to some extent by the attempts to examine or modify school organization that are described in two sound outcome evaluations. The same can be said for young people's positive appraisals of peer and parental support for physical activity, which also appear to have been targeted in some of the sound studies. However the descriptions of these interventions do not allow us to appraise whether or not these organizational changes or developments in peer or family support actually took place, or the extent to which they would actually meet young people's perceptions of what is needed. Furthermore, the effects of these interventions on promoting changes in physical activity behaviour were found to be unclear or restricted to a sub-group in the school population (older young women).

The effectiveness of interventions that address other concerns identified by young people have yet to be sufficiently evaluated. This is the case for the need for less traditional school-based activities including dance and aerobics, for modifications to PE organisation and teaching, and for additional community and personal resources or materials. These findings represent significant gaps for research and development around physical activity promotion for young people. Also unevaluated are interventions that specifically target young women. In contrast, a large number of studies appear to have evaluated the effects of interventions aimed to increase young people's knowledge about physical activity, despite studies of young people's views not mentioning studies of lack of knowledge as a barrier.

Conclusions and recommendations

The main findings of the review were that there is insufficient good quality research evaluating the effectiveness of interventions to promote physical activity, particularly in the UK. Only four rigorous outcome evaluations were identified. These showed some effect on increasing participation in physical activity, particularly for young women. Young people have clear views on the barriers to, and facilitators of, their participation in physical activity, yet interventions evaluated by good quality research often do not target what they see as important. In particular, interventions do not always take into account gender issues affecting participation, particularly the needs of young women. Moreover, material resources (e.g. access to sports facilities with adequate changing facilities) are viewed by young people as having a major influence on their participation, but there are few evaluated interventions which have

targeted such structural factors at the wider societal level. There is also little research about the promotion of physical activity for socially excluded groups.

In terms of recommendations for those wishing to implement effective interventions, a 'whole school' approach (i.e. one involving all members of the school community) can promote greater involvement in physical activity. School-based peer-led initiatives, particularly where peers also lobby for environmental changes throughout the school, can be beneficial (although may be more effective for promoting healthy eating than physical activity).

Approaches which could take into account young people's views and which require evaluation include: interventions which aim to increase the range of 'free' diverse activities through after-school clubs and community-based initiatives; provision of community and school facilities for safe bicycling; improved physical education facilities at school, particularly improvements in the environment suitable for young women's needs (e.g. adequate changing facilities and appropriate gym kit); making PE more appealing by providing young people with the choice about the type of physical activity, and by emphasising the fun and social aspects of sport and exercise. Research is also required on: exploration of the parental and relationship constraints on participation in physical activity, particularly for young women (e.g. parents not allowing them to travel to amenities because of safety concerns); and the inter-relationships between physical activity and mental health, particularly self-confidence.

Future initiatives to promote physical activity among young people should also take their views as a starting point, and young people should be considered as equal stakeholders. Evaluation of such initiatives should employ, where possible, rigorous methodology and report details of procedures in a detailed and consistent manner to promote confidence in their rigour, and facilitate replication.

AIMS

This report is the second in a new series of reviews from the health promotion stream of work at the Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre)[1] at the Social Science Research Unit, Institute of Education, University of London. The review series is focused on three topic areas: mental health, physical activity, and healthy eating. This second report describes the findings of an extensive literature review concerned with young people and physical activity. The overall aim of the report series is to collate the evidence on the barriers to, and facilitators of, health behaviour change and attitudes to risk and risk-taking amongst young people, especially those from socially excluded groups. This will hopefully provide practitioners, policy-makers and researchers with a summary of evidence to help them plan interventions for young people which are likely to be effective in bringing about sustainable behaviour change, and will also identify future research needs. The current report is preceded by a review in the area of mental health (Harden *et al.,* 2001) and will be followed by a review in the area of healthy eating; a final report will bring together the findings from the three areas. The methodology used in the reviews has developed over the review series.

The overall series of reviews is guided by the following overarching research questions:

- What is known about the factors which promote or hinder young people's health behaviour change across a number of health topics/settings?
- How well do these factors explain the health behaviour/change of young people?
- Which factors best explain young people's attitude to risk-taking and the relationship between these and health behaviour/change?
- How can we use the conclusions of this research to improve the efficacy of health promotion interventions for young people?
- What gaps in the research evidence exist, and how might these best be filled?

This series of reviews builds on previous work on systematic reviews of the effectiveness of health promotion (Oakley *et al.,* 1996; Peersman *et al.,* 1996, 1998, see also France-Dawson *et al.,* 1994; Oakley *et al.,* 1994a; Oakley and Fullerton 1994; Oakley *et al.*, 1994b; Oakley and Fullerton, 1995; Oakley *et al.,* 1995a; Oakley *et al.*, 1995b; Oakley *et al.,* 1995c). The current series of reviews includes a wider range of study types than are normally included in systematic reviews of health promotion effectiveness. One of the central objectives of the reviews is to develop methodologies for identifying criteria for assessing the reliability of evidence from non-experimental studies. These

[1] The EPPI-Centre was previously known as the Centre for the Evaluation of Health Promotion and Social Interventions (EPI-Centre)

reviews build on a previous descriptive mapping of health promotion research and young people (Peersman, 1996), and on previous attempts to include non-experimental studies in systematic reviews (Harden *et al.,* 1999a; Oliver, 2001).

The aims of the review described in this report were:

1. To undertake a *systematic mapping* of research undertaken on the barriers to, and facilitators of, physical activity amongst young people, especially those from socially excluded groups.

2. To select a sub-set of studies to review *in-depth*.

3. To *synthesise* what is known from these studies about physical activity barriers and facilitators amongst young people.

4. To identify gaps in existing research evidence.

This report describes work carried out in two stages: an overall mapping and quality screening of the literature (chapters 2 and 3) and an in-depth review of a subset of this literature (chapters 4, 5 and 6). Chapter 1 sets out the background to the report. The results of the in-depth review are brought together in a synthesis (chapter 7). An overall discussion is presented in chapter 8, and chapter 9 draws conclusions and makes recommendations.

1. BACKGROUND

Outline of chapter

This chapter sets out the context for this systematic review. In addition, it lays out the scope and the approach taken in the review. This chapter will therefore be of interest to ***all readers*** *of this report.*

Key messages

- *Regular participation in physical activity has enormous potential for improving health. In young people it can play a role in preventing obesity and other risk factors for cardiovascular disease, and promoting mental health.*

- *The term physical activity includes structured activity such as sport and exercise, as well as unstructured activity such as walking to and from school or active play.*

- *Current guidelines recommend that all young people should participate in physical activity, of at least moderate intensity, for one hour per day. In 1997, only 61% of young men and 42% of young women achieved this.*

- *Theoretical perspectives and empirical studies suggest that the determinants of participation in physical activity lie at three main levels: the individual (e.g. attitudes); the community (e.g. social support); and society (e.g. provision of facilities).*

- *Relevant UK policy requires cross agency working to promote participation in physical activity. This should include initiatives to make it easier to walk or cycle to school, and ensuring adequate opportunities for active recreation. Initiatives need to work within the broader government agenda of tackling inequalities in health.*

- *Research on the barriers to, and facilitators of, physical activity is extensive. This systematic review was therefore carried out in two-stages: a descriptive mapping and quality screening of all research identified to be relevant, and an in-depth review of a sub-set of studies.*

- *The commissioners and potential users of the review prioritised for in-depth review: community or society-level barriers and facilitators; UK studies which seek young people's own descriptions of what helps them and what stops them taking part in physical activity; and a focus on intervention studies of a high methodological quality.*

1.1 Why promote physical activity amongst young people?

Physical activity has enormous potential for improving the health of the public (Sparling *et al*., 2000). Within adults, physical activity has an important role in: reducing cardiovascular disease; preventing or delaying the development of high blood pressure; controlling and preventing diabetes; regulating weight; reducing the risk of osteoporosis and colon cancer; alleviating depression and anxiety; and contributing to a positive sense of well-being (Centers for Disease Control, 1997; Health Development Agency, 2000). For example, in a recent systematic review of studies of adults, Wannamethee and Shaper (2001) concluded that being physically active is associated with a 40 to 50 per cent reduction in the risk of a stroke and coronary heart disease.

A review by Riddoch (1998) concluded that the evidence for a positive association between physical activity amongst children and young people and their future health was weaker but still suggestive. Within this age group, physical activity has been linked to: improved aerobic endurance and muscular strength; positive changes in the risk factors for cardiovascular disease such as Body Mass Index (BMI), blood lipid profiles and blood pressure; increased bone density; higher levels of self-esteem; and lower levels of anxiety and stress (Centers for Disease Control, 1997).

Despite the weaker evidence in children and young people, Biddle *et al*. (2001) argue that there is still a strong case for promoting their participation in physical activity because of the key role it can play in the prevention and reduction of obesity. Evidence regarding the increased prevalence of obesity amongst young people in the UK is mounting. A recent study examined trends in weight and obesity among primary school children in England and Scotland (aged 4 – 11 years) through three cross sectional studies between 1974 and 1994 (Chinn and Rona, 2001). Data indicated that whilst overweight and obesity as measured by body mass index remained stable between 1974 and 1984, there was a noticeable increase between 1984 and 1994. In addition, promoting physical activity in young people is seen as important for encouraging them to adopt lifestyles which will be maintained into adulthood, thus lessening the risk of chronic diseases later in life (Biddle *et al*., 2001).

1.2 What is physical activity?

The health benefits associated with physical activity raise questions about what exactly physical activity is, and how much or what type of activity people need to engage in to achieve the benefits. Although the terms ‘physical activity’, ‘exercise’, ‘physical education’ and ‘sport’ are often used interchangeably, there are important differences between them. Physical activity can be defined as “any bodily movement produced by skeletal muscles that results in energy expenditure” (Caspersen *et al*., 1985:127). Exercise is just one component of physical activity, and is defined as “planned, structured and repetitive bodily movement done to improve or maintain one or more components of physical fitness” (Caspersen *et al*., 1985:127). Physical fitness consists of both health and skill related attributes such as cardiorespiratory endurance, muscular strength, flexibility, body composition, balance, speed, reaction time, co-ordination or agility (Centers for Disease Control, 1997). Based on Rejeski and Brawley (1988), Biddle and Mutrie (2001:8) define sport

as “a sub-component of exercise whereby the activity is rule governed, structured and competitive and involves gross motor movement characterised by physical strategy, prowess and chance”. ‘Physical education’ or PE has been defined as “the part of the school curriculum that aims to educate young people through physical activity” (Health Education Authority, 1998:2).

Exercise and sport can be contrasted with ‘active lifestyle’, ‘active recreation’ and ‘active transport’. These refer to unstructured or spontaneous physical activity performed in our daily lives (e.g. walking to school/work, gardening, active play). Unlike exercise or sport, it is much less likely that these are done in the pursuit of physical fitness. Active recreation and active transport also highlight the importance of not overlooking their opposites, such as sedentary pastimes (e.g. watching TV, playing computer games) or travelling by car or bus.

Physical activity varies in intensity: light, moderate and vigorous. Moderate intensity is any activity done at a level which leaves the participant feeling warm and slightly out of breath, while vigorous intensity is “expected to leave the participant feeling out of breath and sweaty” (Health Education Authority, 1998:2). Many of the health benefits of physical activity occur with moderate to vigorous intensity exercise. Riddoch (1998) notes that whilst vigorous exercise may be the most effective means for improving cardiovascular fitness, many of the other positive health changes (e.g. change in blood lipids, bone health, psychological benefits, increased energy expenditure for the prevention or reduction of obesity) occur at moderate intensity levels of different types of activity (e.g. brisk walking, strength and weight bearing activities). Indeed, Wannamethee and Shaper (2001) conclude that physical activity does not have to be strenuous or prolonged to reap health benefits and can include activities such as brisk walking or gardening.

Debates and new advances in sport science are reflected in the changing nature of recommendations to the public about how much and what type of physical activity to participate in. Sallis *et al*. (2000) notes that recent recommendations from three groups emphasise a daily accumulation of at least 30 to 60 minutes of physical activity. These recommendations are based on an ‘accumulative’ approach to physical activity as opposed to a sole focus on the ‘sustained’ approach of earlier guidelines recommending three to five sessions of at lest 20 minutes duration (Gilson *et al*., 2001). The accumulative approach recommends that moderate to vigorous activity can be accumulated in shorter bursts throughout the day. In the UK, this approach underpins some of recommendations of the most recent published guidelines (Biddle *et al*., 2001). The primary recommendations state that all young people should participate in physical activity of at least moderate intensity for one hour per day. Those that do little activity should participate in physical activity of at least moderate intensity for at least half an hour per day. Secondary recommendations suggest strength and weight bearing activities undertaken at least twice a week to help enhance and maintain muscular strength, flexibility and bone health.

These primary recommendations fit with the concepts of lifestyle activity referred to earlier. Looking across a number of surveys of participation in physical activity, Gilson *et al*. (2001) found that much larger proportions of young people were able to meet the criteria for being physically active using criteria from the accumulative approach. This suggests that young people may find the current UK recommendations for physical activity more

achievable. They go on to argue that promoting physical activity according to this model may be more successful with currently sedentary young people. As Biddle *et al*. (1998:3) note "the recommendations are intended to take into account the current physical activity patterns and lifestyles of young people, so that they do not represent unattainable goals that discourage young people from trying to achieve them".

In summary, clarifying what is meant by the term 'physical activity' suggests a much wider range of activities than those which are traditionally associated with 'exercise', 'sport' or 'PE'. It can take the form of walking, cycling, dancing, doing active household chores as well as organised sports or exercise and it can take place in a variety of settings including home, school, parks, leisure centres, bike or walking trails (Centers for Disease Control, 1997). On the current evidence, regularly engaging in any of these activities is just as likely to bring about health benefits as exercising vigorously three to five times a week. However, it is important to note the specific health benefits associated with particular types of physical activity (e.g. cumulative moderate activity resulting in increased energy expenditure for preventing obesity; vigorous activity for cardio-respiratory fitness; and strength and weight bearing activities for bone health). The distinctions between exercise or sport; active recreation and active transport; and sedentary behaviour are likely to be important for examining the barriers to, and facilitators of, physical activity amongst young people [2].

1.3 Prevalence of, and opportunities for, physical activity amongst young people in the UK

Having considered the rationale for promoting physical activity and definitions, questions arise regarding the prevalence of physical activity amongst young people. The National Diet and Nutrition Survey reports the prevalence rates of physical activity for a representative sample of 2672 young people aged 4 to 18 in the UK (Department of Health, 2000a). Carried out in 1997, the report concluded that that there were high levels of inactivity amongst young people. Although the majority of young people achieved at least half an hour of moderate intensity physical activity per day, fewer achieved at least an hour a day of at least moderate physical activity (61% of young men and 42% of young women). These proportions declined with age such that the 15 to 18 years age group showed the lowest levels of activity. There was no difference in participation rates according to social class, region, household income or being at school or work, although young men from manual households and households receiving benefit spent more time on average in sedentary activities. The most frequently cited modes of physical activity in the 11 to 18 years age range were football, brisk walking, ball games and cycling for young men; and brisk walking, cleaning and other domestic chores, running/jogging and Physical Education (PE) or gym for young women. This pattern of results is similar to that seen in other surveys. For example, Armstrong *et al*. (1990) also found relatively low rates of physical activity amongst young people aged 11 to 16, measured by the number who did not record a 10 minute period with heart rate grater than 139 beats per minute over a four day period. In a

[2] This review uses the term 'physical activity' to encompass a broad range of activities. However, the more specific terms of 'sport', 'exercise', 'PE', 'fitness' are used when appropriate or if these are the terms used by the authors of individual studies included in the review.

longitudinal study using similar measures, Armstrong *et al*. (2000) found decreasing levels of physical activity from aged 11 to 13, with more young women becoming inactive than young men.

Another recent study on prevalence rates and opportunities for activity in and out of school is 'Young people and sport, National Survey 1999' conducted by Sport England and MORI (Sport England, 2000). It reports the results of a random cross sectional sample of young people aged 6 to 16 years old (n=3,319). PE teachers (n=151) were also surveyed. The results are compared with those of a previous survey conducted in 1994. The 1999 study found that the proportion of young people spending between half an hour to an hour on PE in school increased by 5% in 1994 to 18% in 1999. In contrast, the number spending two hours or more on PE decreased from 46% to 33%, with decreases most marked for primary school children. Therefore, the trend is in more young people doing shorter rather than longer PE. All secondary schools had at least one member of staff with a specialist PE qualification in contrast to primary schools where only half did. A quarter of all teachers surveyed felt that the sports facilities in their school were inadequate.

In terms of participation in sport and exercise outside of school, there was a slight increase (from 74% to 79%) in the proportion of young people taking part after school on most days. This was paralleled by a similar increase (from 62% to 67%) in those taking part during their lunch breaks. The most popular type of sport was football, with increases in participation for both young men and young women. Young men were more likely to play team games out of school than young women. There was a slight decrease in cycling during leisure time. There was a general increase in young people taking part in extra curricular sport (from 37% to 45%), with football being the most popular activity. Similarly, there was an increase in the number who were members of an organised sports club independent of school (from 42% to 46%) - this was higher amongst young men. The authors point out that opportunities for extra curricular sport might be more appealing to enthusiastic and skilled young people, as well as those who have better access to facilities (e.g. able to afford leisure centre costs, equipment and kit, and have parents with flexible working hours).

The results of this study were generally positive, with overall increases in levels of participation; however, time devoted to PE in schools was reported as decreasing. This was not necessarily compensated for by increases in participation (extra-curricular and otherwise) outside of school hours. The socio-economic implications of this are that only the most committed and upwardly mobile are likely to take part, with those from more disadvantaged socio-economic backgrounds only taking part at school in what appears to be a decreasing priority in the curriculum.

1.4 What determines participation in physical activity?

Declining rates of participation in physical activity within the general population have been linked to: a reduction in occupational exercise; greater use of the car leading to a decline in walking; an increase in lifts and escalators; fewer opportunities for physical activity in schools and the community (the latter linked to fears of safety including fears of racial harassment); and more sedentary pastimes (National Audit Office, 2000). This context is important for

understanding what determines participation in physical activity and how it might be promoted. This section describes the range of factors that are thought to impact on participation in physical activity through an examination of different theoretical perspectives and empirical studies.

Theoretical perspectives

A variety of theoretical perspectives have been applied to help study possible determinants within a coherent framework. These include the following three perspectives: psychological, sociological and pedagogical.

(i) Psychological perspectives

A number of social psychological theories of behaviour have been applied to physical activity. Although the distinctions between the different theories are blurred, these can usefully divided into motivational and social cognitive theories which emphasis the role of personal control, competence, and attitudes; social influence theories which emphasise the role of social groups; and stage or process theories which emphasise how people move into or out of participation in physical activity. Bourdeaudhuij (1998) recommends that the various constructs and theories should be integrated into unified theories of participation in physical activity.

As Biddle and Mutrie (2001) note, a key task for a psychology of physical activity is understanding the role of motivation in participation; that is, how do people decide to take part? Motivational theories (e.g. goal perspective theory) have been found to be a useful framework particularly in explaining participation or enjoyment of PE classes where goals and targets might be set (Bourdeaudhuij, 1998). Here, factors related to self-directed or intrinsic motivation (i.e. internal rewards such as enjoyment or mastery of a new skill) have been found to be better predictors of continued participation in post-compulsory PE (Spray, 2000) and enjoyment of PE (Vlachopoules *et al.,* 1997) than extrinsic motivation (e.g. a desire to perform better than others). A feeling of perceived competence or self-efficacy in being able to participate in physical activity are also important in motivational and social cognitive theories. A relationship between attitudes towards physical activity and participation or intentions to participate has led to the application of the Theory of Reasoned Action and the Theory of Planned Behaviour (Bourdeaudhuij, 1998). These models emphasise the role of individual decision-making processes such as weighing up the consequence of actions and considering their value (Biddle and Mutrie, 2001). However, a central tenet is that attitudes on their own are not sufficient. The beliefs of important others (e.g. friends think I should participate) and perceived control over participation (e.g. perceived power to overcome obstacles to participation) are also thought to be important determinants.

Whilst social cognitive theories emphasise the role of individual decision-making processes, social influence theories focus on the role of others. Biddle and Mutrie (2001) highlight the potential importance of ‘exercise leaders’ (e.g. personal trainers); group climate (e.g. whether group ethos is one of comparing performance between members or encouraging self-improvement/ learning); group cohesion; and social support.

Biddle and Mutrie (2001) describe examples of stage theories which have been primarily applied to exercise behaviour. These include the

'transtheoretical' or 'stages of change model' (e.g. Marcus and Simkin, 1994), and the 'natural history model' (Sallis and Hovell, 1990). Both of these posit stages or transition phases which an individual may move through towards regular participation in physical activity. In the stages of change model, the stages include:

- *precontemplation*, in which there is no intention to participate in the near future;
- *contemplation*, in which there is an intention to start participating; action in which participation has just begun;
- *maintenance*, in which participation continues;
- *termination* in which there is no intention to stop participating; and
- *relapse* in which there is a return to precontemplation or contemplation.

These models represent a move away from static models of physical activity but their application to adults and young people in empirical studies is as yet rather limited (Biddle and Mutrie, 2001; Bourdeaudhuij, 1998).

These theories primarily emphasise the psychological determinants of physical activity. However, they do acknowledge the important role of wider determinants such as the social and physical environment, culture and society. These are the focus of the sociological and pedagogical perspectives considered below.

(ii) Sociological perspectives

These perspectives locate young people's participation in physical activity within the context of their social relationships and wider society. Sociological perspectives have mainly been applied to looking specifically at sports or the broader area of leisure rather than physical activity *per se* (e.g. Coakley and Donnely, 1999; Roberts, 1998).

Key frameworks for sociological perspectives involve examining the processes of socialisation and the identity formation. For example Donnely and Young (1999) examined identity formation amongst rock climbers and rugby players. They proposed two processes as important for entry into and continued participation in sport: continual identity construction and affirmation. Identify construction is posited to consist of three stages: *presocialisation*, which is when all the necessary information is acquired about the sport; *selection/recruitment*, which refers to the first participation in the sport; and *socialisation*, in which training in the skills and lifestyle or culture of the sport takes place. However it is only when the identity is confirmed by 'veterans', that a sporting identify develops. Coakley and White (1999) note that young people's participation or non-participation in sport needs to be understood in the broader context of key transitions in their lives (e.g. moving from primary to secondary school) and what it means to be 'growing up'. This means that their choices about whether to participate in sport may be governed according to whether they fit in with such transitions and provide them with a sense of being independent and in control of their lives.

Central to sociological perspectives is the need to look at how decisions about, and experiences of, physical activity are structured according to class, gender and ethnicity. In this respect young people are assumed to be active agents, participating or not participating in sport through "a series of shifting, back-and-fourth decisions made within the structural, ideological, and cultural context of

their social worlds" (Coakley and White, 1992:21). For example, feminist analyses have been important in illuminating how young women might be discouraged from taking part in physical activity because of dominant constructions of femininity and masculinity perpetuated in society. These include the assumptions that young women are not as physically capable as young men and that young women need to be protected from the 'rough' physical contact in sports and the possibility of 'over-development' (e.g. Scraton, 1986a, 1986b). The values embedded in the way that PE is structured in school (e.g. the importance of showers and traditional sports clothing) have also been highlighted to conflict with the values of other cultures. For example, Carroll (1998) has found that Muslim young men and women often find it difficult or uncomfortable to take part in and enjoy PE in British schools (Carroll, 1998).

Thus, sociological perspectives highlight how decisions about physical activity are bound up with a young person's wider social context and this includes the way that opportunities for participation are provided, such as PE in school. PE in schools is the focus of the third set of perspectives.

(iii) Pedagogical perspectives

The school has come to be seen as a significant medium for the promotion of physical activity and the term 'health-related exercise' has been adopted within the physical education National Curriculum (Harris and Cale, 1997). Teaching health-related exercise involves trying to bring about a greater understanding and commitment to physical activity for life-long participation as well as the teaching of motor and behavioural skills. In this respect, pedagogical perspectives may be important for examining relationships between the way PE is provided and taught in schools and future participation in physical activity in and outside of school (Harris and Cale, 1998). Indeed, evidence suggests that, for some students at least, negative experiences in physical education lessons may discourage young people from taking part in sport and exercise in the future (Coakley and White, 1992; Spray, 2000)

These perspectives include examining the nature and purposes of PE and its place in the school curriculum, the way PE is taught, and equal opportunities in PE (Green and Hardman, 1998). For example, many studies have examined the question of what makes an effective teacher and some have attempted to test the effectiveness of different teaching strategies such as providing teacher or student feedback (see Hardy, 1998 for an overview). As indicated in the previous section on sociological perspectives, there is now a growing body of literature on how the way PE is provided in schools can perpetuate or reinforce wider divisions and inequalities in society.

Pedagogical perspectives often involve taking into consideration the impact of wider educational reforms on PE. For example, Penny and Evans (1995) have examined the impact of the creation of an internal market with the introduction of the 1988 Education Reform Act. They argue that as a result of PE having to compete for funding, resources and status with other curriculum subjects the quality of teaching and learning in PE has inevitably suffered.

Empirical studies

Empirical studies that examine what is associated with participation in physical activity can help to identify the relative importance of different factors within different groups of young people. Key variations in participation rates according to age and gender and the theoretical perspectives outlined above begin to highlight the kinds of factors that may determine participation amongst young people. Studies have examined three broad types of factors: individual (e.g. psychological/ behavioural); social/cultural (e.g. family and peer influences, socio-demographics); and environmental (e.g. facilities) (Bourdeaudhuij, 1998; Sallis *et al*., 2000; Wold and Hendry, 1998).

There have been many reviews which try to bring together the results of studies examining the correlates of physical activity amongst young people. Sallis *et al*. (2000) however note that these have produced conflicting findings on which have consistent relationships with participation. In their systematic review of studies on young people aged four to 18, they attempted to address some of the problems associated with these previous reviews to produce a more reliable picture. They found that 48 distinct variables had been studied spanning socio-demographics; psychological variables; behavioural variables; social and cultural factors and the physical environment. From the 54 studies published between 1970 and 1998 which examined correlates among young people aged 13 to 18 they identified: factors which have been shown to have a consistent negative or positive relationship; an inconsistent; or no relationship. A summary of their results is displayed in Figure 1 below.

Figure 1: Factors found to be consistently related to physical activity levels; inconsistently related; or unrelated. (Abstracted from the systematic review by Sallis *et al*., 2000)

	Consistent relationship		**Inconsistent relationship**	**Unrelated**
	Positive	**Negative**		
Demographic and biological factors	*young men more active *whites more active	*older young people less active	*body weight *adiposity	*socio-economic status
Psychological factors	*achievement orientation *perceived competence *intention to be active	*depression	*perceived benefits *self-efficacy *body image *attitudes and knowledge *enjoyment of PE	*perceived barriers *external locus of control *self-esteem *self-motivation *enjoyment of exercise *perceived stress
Behavioural factors	*sensation seeking, *past participation in physical activity *participation in sports in the community	*sedentary behaviour after school and at weekends	*smoking	*alcohol use *healthy eating *sedentary time in general
Social / cultural factors	*parental support *support from 'significant others' *sibling activity levels		*support from peers	*parental activity levels *peer modelling *teacher or coach support
Physical environment	*opportunities to exercise			*sports media influence *availability of equipment

This review is useful in trying to create a clearer picture of the determinants of physical activity. Sallis *et al*. (2000) argue that variables consistently related to physical activity levels need to be targeted in intervention programmes which should then be rigorously evaluated; variables showing an inconsistent relationship need further investigation; and variables which have been deemed unrelated should be de-emphasised in future studies. They also note however, that the lack of an association may be due to the way various factors have been measured in the few studies available. For example, some measures may not have tapped into aspects of young people's lives in a way that is meaningful and relevant to them. Studies that examine the meanings young people attach to physical activity and their views on what helps and what hinders their participation in physical activity are a particular focus of this review.

Further, some relationships may mask others. For example, social class may account in part for the observed relationship between ethnicity and physical activity. In line with the findings of the National Diet and Nutrition Survey (DoH, 2000a), social class may be linked with the negative relationship between time spent in sedentary activity after school and at the weekend. The impact of social class is clearly an area for further investigation. Wold and Hendry (1998) argue that because it is well established in the general population that that those in lower socio-economic groups exercise less, it is likely that young people from lower social classes are less likely to maintain exercise and activity into their adulthood. Further, since opportunities for physical activity have been positively linked to participation, inequalities in access to facilities may be problematic for these young people. Wold and Hendry (1998) raise some important questions which necessitate the need for further evidence, including, how much does the distance to facilities influence physical activity, and how can physical activity among young people from lower socio-economic classes be effectively promoted?

1.5 Current policy framework for promoting physical activity

The promotion of physical activity has been given a high priority within the health policy agenda in the UK. Our Healthier Nation, the government's strategy for health (DoH, 1998) aimed to reduce the risk from chronic and preventable disease and promote positive health across all population groups, including young people. 'Saving Lives', which came out a year later (DoH, 1999b), set specific targets for the prevention of deaths from cancer, coronary heart disease, stroke, accidents and mental illness. It is recognised that being physically active can play a significant role in reducing the risk of coronary heart disease, cancer, stroke and diabetes, as well as promoting an overall sense of well-being and that health promotion is a key part of achieving these targets. Standard one of the National Service Framework for Coronary Heart Disease aims to reduce the prevalence of coronary risk factors in the population, and reduce inequalities in these risk factors (DoH, 2000a). All NHS bodies needed to have agreed and begun to implement policies on promoting physical activity by April 2001; and by April 2002 will be expected to have data on the implementation of these policies.

Although these policy documents apply to all population groups, young people have been highlighted as an important group to target. Biddle *et al*. (2001)

make specific recommendations based on scientific evidence and expert opinion about key agencies that should be involved in promoting physical activity. These include the education sector (e.g. local education authorities); local authorities (e.g. social and environmental services); sports organisations (e.g. youth groups); health services (health promotion, primary care); mass media (e.g. broadcasters); and Government departments (e.g. the DoH, England). An example of a recommended collaboration would be between a local education authority and a local authority to develop safe and appealing sports facilities.

In recognition that no one agency can be held solely responsible for promoting physical activity, the DoH has taken the lead on a cross government strategy. The National Audit Office (NAO) has undertaken a review of policies relating to tackling obesity across government departments to identify current collaborative work and further opportunities (NAO, 2000). This highlighted inter-linking policy objectives across departments and subsequent cross-agency working at both the government and local level. The inter-linking objectives in which physical activity can play a part are:

- To reduce risk factors for coronary heart disease, cancer and stroke and inequalities in risk factors and to promote mental health for all (DoH).

- To make it easier to walk and cycle and thereby reduce reliance on cars (Department of Transport, Local Government and the Regions (DTLR)

- To ensure young people reach 16 with the skills, attitudes and personal qualities to give them a secure foundation for lifelong learning, work and citizenship. This includes providing education on health and ensuring school environment promotes health (Department for Education and Employment (DfES)).

- To ensure adequate opportunities for active recreation for all including socially disadvantaged groups (Department for Culture, Media and Sport (DCMS))

The main focus of the work arising from these inter-linking policy objectives for young people is on schools (the curriculum, school facilities and transport to and from school), but some also focus on creating opportunities for an active lifestyle within a young person's wider community. Mechanisms for promoting physical activity may also arise out of more 'general' initiatives aiming to reduce inequalities (e.g. Health Action Zones from the DoH, Neighbourhood Renewal from the DTLR). Specific examples are detailed below.

- The Healthy Schools Programme and the National Healthy School Standard are run jointly by the DfES and the DoH and managed by the Health Development Agency (HDA). Through the provision of local support for schools, these aim to ensure that education is provided within the curriculum on health issues, including physical activity, and to develop a school culture that places greater emphasis on physical recreation and sport. The DfES has also pledged to address concerns about the declining time devoted to physical activity in the curriculum and to increase the range of activities available to 14 to 16 year olds.

- The DfES have recently pledged a commitment to help schools aspire to at least two hours of high quality physical activity a week. This is to become

an entitlement for pupils. The Qualifications and Curriculum Authority (QCA) are producing guidance for helping school to achieve this.

- The DfES, the DTLR and the DoH have produced guidance for local authorities, schools and parents on building a safe environment for pupils to walk or cycle to school (e.g. enhancing footpaths and cycle lanes). The DfES have also launched the 'Safe and Sound Challenge' which will provide financial support for schools to develop ideas for safe travel to school (e.g. 'walking bus').

- The DCMS has established 12 Sports Action Zones in the most deprived areas and aims to establish a further 18. Other initiatives are to refurbish school sports facilities and to open them up to the wider community so that whole families can participate; encouraging and supporting schools to provide a range of after school sporting activities; creation of more specialist sports colleges; provision of sports co-ordinators to develop inter-school competition in sport and the coaching and leadership skills of teachers and older pupils; and a 'Green Space' initiative to create spaces for play and recreation where none currently exist.

- Some Health Action Zones, which have been set up in areas of deprivation and poor health to tackle health inequalities and modernise services through local innovation and partnership, have involved providing improved leisure facilities for young people.

1.6 The needs of socially excluded groups

As indicated above, current health and wider government initiatives emphasises reducing inequalities and social exclusion. This focus is in recognition of evidence that the homeless, the unemployed, the abused, the chronically ill, and ethnic minorities, amongst others, are all at elevated risk for ill-health.

The Acheson report (Acheson, 1998) has emphasised a clear commitment to tackle health inequalities across governmental sectors. Based on an independent inquiry, the report makes 39 recommendations for action to reduce ill-health due to poverty and socio-economic disadvantage. This is to be achieved through building healthy communities, provision of better housing, promotion of better educational attainment (including health promoting schools), improvement in employment opportunities, reduction of crime, and better public infrastructures (e.g. improved and affordable transport). Interventions to promote healthier lifestyles, termed 'downstream' interventions, are also advocated, linking in with the goals set in 'Our Healthier Nation'. This is in direct contrast to prior initiatives which focused more narrowly on improving the health of individuals without necessarily tackling their wider socio-economic circumstances.

These recommendations are reflected in the specific policy initiatives for promoting physical activity outlined above. Their focus is on creating opportunities for participation within young people's school and social environment, rather than solely on persuading young people to become active through education.

The needs of socially excluded groups are a particular focus within the current series of EPPI-Centre reviews. This is in recognition that the most disadvantaged are more likely to experience barriers to physical activity, healthy eating and good mental health. For example, young people living in deprived areas may exercise less because leisure amenities are lacking. Young women may be less likely to participate in sport than young men, as sport is often stereotyped as being a masculine activity (Armstrong, 1995). Furthermore, young men may be more likely to use physical activity as a means of controlling their weight, whilst young women are more likely to turn to dieting.

1.7 Approach taken in this review

This review has a number of distinctive features which make it different, not only to ordinary (non-systematic) reviews of the literature, but also to traditional systematic reviews of effectiveness. This section lays out the general principles adopted in the review in terms of: a framework for conceptualising barriers to, and facilitators of, physical activity; the rationale for the methods used in the review (including our 'novel' attempt to integrate the findings from experimental research and observational and 'qualitative' research); the two-stage process by which the review was carried out (descriptive mapping followed by in-depth review); and defining a sub-set of studies for in-depth review.

Barriers and facilitators: a conceptual framework

For the purposes of this review, we are using the terms 'barriers' and 'facilitators' to refer to factors which either promote or hinder participation in physical activity amongst young people. Research findings about the barriers to, and facilitators of, physical activity participation amongst young people can help in the development of potentially effective intervention strategies. Interventions can aim to modify or remove barriers and use or build upon existing facilitators. We have categorised barriers and facilitators according to whether they reside at three levels: the *individual* (e.g. knowledge, attitudes, skills); the *community* (e.g. social support networks, family relationships); and the *society* (e.g. discrimination, social class, access to resources).

These three levels are supported by various definitions and models of health promotion which incorporate the determinants of health in general and how it may be promoted (e.g. Green and Kreuter, 1991; Hawe *et al.*, 1990; Tones and Tilford, 1994). For example, Tones and Tilford (1994) emphasise environmental influences, (e.g. cultural, socio-economic and physical), individual choice and lifestyle and the provision of health services. Social networks and support at the community level feature as important influences in a model of the dynamics of self-empowerment also outlined in Tones and Tilford (1994:26). Similarly Hawe *et al.* (1990), in their framework for assessing the factors associated with health problems or behaviour to aid in planning health promotion programmes, emphasise factors which can be classified according to whether they reside at the individual (e.g. attitudes, knowledge), community (e.g. role models, social support) or society level (e.g. policies on health and equity; health services). As Lister-Sharp *et al.* (1999) note, an increased understanding of the determinants of health and health behaviours has led to the recognition that health promotion needs to develop multi-faceted approaches which tackle barriers and foster facilitators at all levels. Such a

framework also fits in with the strategies for improving mental health outlined in 'Saving Lives' (DoH, 1999b), which emphasises what individuals can do, what communities can do and what governments can do.

The inter-relationship between the three levels clearly needs to be acknowledged. For example, barriers and facilitators arising out of individual psychological factors may be dependent on an individual's interpersonal relationships or status in society. Similarly, social support may be achieved by changes to structural factors at the society level, but may also be fostered at the individual level by strengthening a person's social skills.

A range of research designs can be used to illuminate the barriers to, and facilitators of, physical activity. For a discussion of how these were included in the review, see below under 'Review methods: integrating different study types'.

Review methods: being systematic

A systematic review is *a piece of research* that uses explicit methods in order to produce valid and reliable results. The tasks involved in systematic reviewing, from searching for studies and applying inclusion criteria to extracting data and critical appraisal, are all liable to bias. The main ways in which bias can be minimised involve: trying to identify as much as possible of all the relevant research which exists; using standardised coding procedures, ideally applied independently by more than one reviewer; and assessing the methodological quality of the studies such that conclusions and recommendations are based on the most rigorous studies (Mulrow and Oxman, 1997; NHS Centre for Reviews and Dissemination, 2001). Explicit reporting of how the review was conducted allows others to assess potential sources of bias in the review and thus the validity of its findings (Peersman *et al.*, 2001). This review adopts such principles. For example, all studies at each stage of the review were coded using standardised keywording and data extraction forms. The data extraction and quality assessment of the primary studies included in the in-depth review was done by two reviewers independently. Results were compared and disagreements resolved through discussion. Such discussion is important not only for resolving oversights, but also for clarifying important conceptual definitions.

As noted above, a systematic review aims to synthesise only those studies which are judged to have been carried out in such a way as to produce reliable conclusions. There is currently much debate about the use of randomised controlled trials (RCTs) to evaluate the effectiveness of health promotion and other social or 'behavioural' interventions (e.g. MacDonald, 1997; Oakley, 1998; Oakley and Fullerton, 1996; Stephenson and Imrie 1998). This debate is part of a wider discussion about what constitutes 'evidence' in relation to both social and healthcare interventions. However, well-designed prospective experimental studies, which include RCTs, provide a range of good quality data which increase the validity and reliability of inferences about which 'treatments' or interventions work (Kleijnen *et al.*, 1997; Sibbald and Roland, 1998). Including an integral process evaluation in trials provides information on how and why interventions work (or not). This review is conducted within these principles, but also recognises the need to develop an understanding of the role of observational and 'qualitative' research in evidence-based health promotion. The following describes how this review attempts to include such research.

Review methods: integrating different study designs

Although this is a systematic review, it differs from a traditional systematic review of effectiveness. The review question was concerned with identifying barriers to, and facilitators of, physical activity, rather than 'which interventions are effective?'. A range of research designs are relevant to answering this question. We hypothesised that barriers and facilitators could be identified in the following ways:

(i) by examining the barriers and facilitators targeted by interventions shown to be effective in promoting young people's participation in physical activity (i.e. which barriers did they aim to reduce/remove? which facilitators did they build upon/show synergy with?);

(ii) by examining the barriers presented by interventions shown to be harmful (i.e. those which lead to a decrease in physical activity); and

(iii) by examining research which did not aim to evaluate specific interventions, but aimed to describe which factors influence young people's participation in physical activity in a positive or negative way.

The research designs employed by studies in this third category will range from large scale surveys and epidemiological analyses of large datasets, to 'qualitative' studies which use in-depth interviews or focus groups. Examples of such studies are those seeking to identify barriers and facilitators by examining what characteristics of young people predict or are associated with participation in physical activity (e.g. age, social class, gender, attitudes, self-efficacy). These studies often involve testing hypotheses generated from a particular theoretical model and produce a description of young people's lives according to the conceptual and analytical framework of that model. Alternatively, some studies will directly present young people's *own* descriptions of their life. These studies may use young people's own analytical observations of what helps them or stops them from taking part in physical activity.

The review therefore includes a wide range of research types including both intervention research and 'non-intervention' research which describes factors influencing young people's participation in physical activity without introducing and evaluating an intervention. We anticipated that by integrating findings about barriers and facilitators across the different study types we would not only be able to provide guidance in 'what works?' for current policy and practice, but also to make recommendations for future development and evaluation. For example, we anticipated that non-intervention research would identify previously untested barriers and facilitators to target in newly developed intervention studies.

Few systematic reviews have attempted to synthesise evidence from such diverse study designs: most have been restricted to experimental outcome evaluations. Thus integrating the findings from both presents a challenge (Egger *et al.*, 1998; Light and Pillemer, 1984). For example, whilst there is considerable consensus about the quality criteria intervention studies need to meet to produce reliable answers to questions of effectiveness, there is little consensus about how to judge the quality of non-intervention research

(including qualitative research) or which questions it can reliably answer (Oakley, 2000).
Whilst all the methods used in the review follow the methodological principles for carrying out systematic reviews outlined above, the review also uses specific methods for integrating different study designs which have previously not been documented. It builds on recent work by Oakley (2000) and Rogers *et al.* (1997) on developing a set of possible quality criteria for judging the soundness of the methods used in 'qualitative' studies. It also carries further attempts to integrate experimental studies with observational and qualitative studies in systematic reviews of effectiveness carried out at the EPPI-Centre. This work includes two systematic reviews which aimed to integrate studies evaluating processes as well as outcome evaluations in the area of smoking cessation for pregnant women (Oliver *et al*., 1999a; see also Oliver, 2001) and peer-delivered health promotion for young people (Harden *et al.*, 1999a; see also Harden *et al.*,1999c).

Stages of the review

This review was carried out in two stages: a descriptive mapping and quality screening exercise of all studies meeting the scope of the review and an in-depth review of the quality and findings of a sub-set of these studies. The rationale for these stages is outlined below.

Previous systematic reviews within health promotion carried out at the EPPI-Centre and elsewhere have tended to uncover large amounts of research to be considered for inclusion in the review (e.g. Peersman *et al*., 1998; Tilford *et al*., 1997). This is partly as a result of improvements in searching techniques (e.g. Harden *et al*., 1999b). However, another important reason is that the questions of interest to health promotion tend to be very broad and encompass a wide-range of possible interventions (e.g. what is the effectiveness of sexual health promotion?); and/or health topics (e.g. what is the effectiveness of peer-delivered health promotion?); and/or outcomes (e.g. what are their effects on knowledge, attitudes, behaviour, environmental changes?). Many systematic reviews in other areas of healthcare address much narrower questions, for example, focusing on the effects of one intervention on one particular outcome. Whilst this ensures that the reviewer's tasks are manageable within given time and resource constraints, it also means that it is much more difficult to piece together the results of narrow reviews to illuminate broader questions (Oliver *et al*., 1999b). There is therefore a dilemma in balancing the need for reviews of health promotion to address broad questions against the need to ensure the workload is manageable.

In their work on methodological issues in systematic reviews of effectiveness within health promotion, Peersman *et al.* (1999) propose a solution to this dilemma in the form of a two-stage commissioning process. Stage one should involve identifying and descriptively mapping relevant studies. Stage two is a detailed review of studies. This ideally follows a discussion between the researchers, commissioners and potential users of the review to determine the criteria for choosing which studies to include. Therefore this solution also provides a way for potential end-users of the review to be involved in setting the scope of the review. This is important for ensuring that systematic reviews are relevant to users.

Defining a sub-set of studies for in-depth review

In the context of this review, the two-stage process was especially important because of our decision to include a wide variety of research designs not traditionally included in systematic reviews. This required developing of new tools and methods to: systematically extract data from studies; assess their methodological quality; and synthesise their findings. We therefore had to take this additional workload into consideration when making decisions about which studies to review in-depth.

Following the two-stage process outlined above, we presented policy-makers and the EPPI-Centre steering group with a variety of options for choosing a sub-set of studies for in-depth review, and asked for their comments. The steering group has representation from the commissioners of the review; the practitioner community; and other researchers specialising in either young people's health or systematic reviews.

This section outlines the options chosen and their rationale. A more detailed account of the specific criteria used to select a sub-set of studies is given in chapter 4. It is important to note that, although we restricted the focus of our in-depth review to particular types of interventions to promote physical activity and to particular groups of non-intervention studies, this does not mean that others were not considered to be important. Furthermore, because we have systematically searched and catalogued this research, we have a bibliography which is available for in-depth examination in the future.

(i) Identifying which intervention studies to prioritise

Consultation with policy-makers suggested a focus on interventions which make changes at the community or society level to support young people to participate in physical activity (e.g. encouraging family support, provision of opportunities for active recreation). These types of interventions were considered to be most relevant to current policy. Therefore good quality research studies (e.g. well conducted and reported randomised or non-randomised trials) evaluating these types of interventions were prioritised for in-depth review.

(ii) Prioritising studies seeking young people's own views alongside intervention studies

As indicated above, the review aimed to include a wide range of study designs, including those that did not aim to evaluate specific interventions, but aimed to describe which factors influence young people's participation in physical activity in a positive or negative way. This type of research traditionally makes a contribution to 'needs assessment'. 'Need', defined by Hawe *et al.* (1990, p.17), is "those states, conditions or factors . . . which, if absent prevent people from achieving the optimum of physical, mental and social well-being". In assessing need, priority areas are determined and an analysis of the health problem is undertaken (Hawe *et al.,* 1990). Needs can be assessed in a variety of different ways, including seeking expert opinion ('normative' need); reviewing epidemiological data and/or use of services ('expressed' need and 'comparative' need). However, increasing importance has been attached to assessing 'felt' need, which is based on what people themselves say. This is reflected in the current commitment of the NHS to involve the public in the development and delivery of services (DoH, 1999b).

In line with this, we proposed to privilege those non-intervention studies which sought *young people's own descriptions of their lives* rather than those which sought to infer their experiences primarily through *researcher description and characterisation of young people.* As indicated earlier, these studies often involve testing hypotheses derived from theoretical models and provide a description of young people's lives within the terms of the conceptual and analytical framework of the researcher or the theoretical model used. These studies can be seen as producing 'expert-driven' descriptions. Whilst this does not mean that these types of studies are not important for illuminating barriers and facilitators, justifications for focusing on the former type of study can be made on ethical, practical and epistemological grounds.

From an ethical perspective, it is only recently that children and young people have been given basic rights to make their voices heard in matters that affect them. Giving a voice to these traditionally silenced groups is now enshrined in the UN convention on the Rights of the Child (1990) (Alderson, 2000). Hennessy (1999:153) notes that eliciting the views of children and young people gives them the opportunity to take part in decision-making; gives them a sense of ownership over their lives; and lets them know that they are valued and respected.

Practically, Hennessy (1999) argues that we should seek children and young people's views because they have a great deal of valuable information about themselves to contribute and what they say can help in understanding the effects of interventions which aim to improve some aspect of their lives. Lloyd-Smith and Tarr (2000:60) note that "young people are capable of producing analytical and constructive observations and react responsibly to the task of identifying factors that impede their learning".

The above practical reasons link into the justification of privileging young people's views on epistemological grounds. It has been argued that the reality experienced by young people cannot be fully understood through research which makes inferences about them. The subcultures they inhabit and the meanings they attach to different aspects of their lives and social worlds may not always be accessible to adults (Lloyd-Smith and Tarr, 2000). Research for young people therefore needs to put young people's own voices at the centre of analysis (Mayall, 1996). This perspective has been reflected in recent recommendations for the planning and development of health promotion interventions. These suggest that it is only by taking into account young people's own views about their health needs and the factors which influence their health, that the most effective and appropriate strategies for promoting health will be developed (Brannen *et al.,* 1994; Moore and Kindness, 1998; Peersman, 1996; Shucksmith and Hendry, 1998).

Synthesising what is known about young people's own beliefs, ideas and experiences complements what is known from mainly 'expert-driven' research about physical activity barriers and facilitators. Comparing young people's views with expert driven research may raise important issues for policy, practice and research.

(iii) Countries in which studies were carried out and publication date

Prior to retrieving studies for our mapping and quality screening exercise, decisions were made about restricting inclusion of studies according to which

country they were carried out in. Previous systematic reviews in health promotion have been criticized because they have not been able to include studies carried out in the UK (Peersman *et al*., 1999). Consultation with the EPPI-Centre steering group therefore highlighted that UK studies should be a priority. The possibility of restricting inclusion of all study types to those carried out in the UK was discussed. For intervention studies it was noted that such a strategy may lead to excluding the learning to be gained from good quality outcome evaluations from the rest of the world. This was felt to be important given that previous systematic reviews have found a dearth of outcome evaluations carried out in the UK (Peersman and Oakley, 2001). However, restricting inclusion of non-intervention studies to those carried out in the UK was felt to be more acceptable for the following reasons. Firstly, the strength of non-intervention studies in illuminating barriers and facilitators was felt to lie in their ability to describe the specific contextual factors influencing young people within the UK (e.g. cultural, social, economic). Secondly, there is much more of this 'descriptive' research available in the UK. Thirdly, examining barriers and facilitators amongst young people in the UK would allow us to judge to what extent the barriers and facilitators targeted in intervention studies from other countries would be transferable to a UK context.

For the in-depth review, a publication date cut off point of 1990 was set for non-intervention research. Again, because the strength of non-intervention studies in illuminating barriers and facilitators lies in their ability to describe the specific contextual factors influencing young people within the UK, it was important to prioritise studies which would identify barriers and facilitators currently relevant. As before, these contemporary studies would allow us to judge to what extent the barriers and facilitators targeted in intervention studies from earlier periods of time would be transferable to the current context.

2. MAPPING EXERCISE: METHODS

Outline of Chapter

This chapter describes the methods used in the first stage of the review: the mapping and quality screening of research relevant to the barriers to, and facilitators of, physical activity amongst young people. This was conducted in three stages: (i) developing relevant inclusion and exclusion criteria; (ii) identification of relevant studies and; (iii) classification of these studies.*

This chapter describes these stages in detail. The criteria developed meant that the research described in the rest of the report covers two broad categories of studies published in English:

- ***evaluations of health promotion interventions** aimed at promoting participation in physical activity among young people (intervention studies);*

- ***other types of studies** examining what helps and what stops young people from being physically active (non-intervention studies e.g. cohort studies, surveys); and*

- ***systematic reviews** of primary studies.*

Evaluation studies include outcome evaluations examining the impact of interventions on participation in physical activity. These may also conduct integral process evaluations examining how or why an intervention worked. While outcome evaluations carried out in any country are included in the report, we restricted other types of study to those reporting UK research. Essentially these types of research were considered to be useful for illuminating the barriers to, and facilitators of, physical activity.

*This chapter is relevant to all audiences as it describes in detail the basic scope of the review, **but this chapter will be of particular interest to:***

- ***any readers** who want to evaluate in detail how this stage of the review was conducted in order to assess the reliability and validity of the review's findings; and*

- ***researchers or others** interested in carrying out systematic reviews to understand how a mapping and initial quality screening exercise can be conducted. **This chapter may be skipped** by readers who are primarily interested in the findings of the review.*

**This systematic review is part of a series of reviews on mental health, physical activity and healthy eating. Because this review on physical activity was conducted alongside the one on healthy eating, the methods in this chapter also refer to healthy eating.*

2.1 Inclusion and exclusion criteria

Because this systematic review is part of a series, this section describes the single set of criteria that were developed for both the physical activity review (this report) and the healthy eating review (Shepherd *et al*., 2001). The development of criteria for the inclusion of studies and the identification and classification of studies were run in tandem for the two reviews to make them more efficient, as it was expected that a large proportion of studies relevant to one review would also be relevant for the other.

The aim of the literature search was to locate a wide variety of research dealing with three broad areas: i) *physical activity* or *healthy eating* ii) generic and specific *determinants* of physical activity or healthy eating (e.g. socio economic factors, lifestyle, culture, risk factors, life change events, attitudes) or the *promotion* of positive health or *prevention* of ill-health (i.e. health promotion, primary prevention); and iii) *young people*.

In order to be considered relevant a report had to: i) evaluate a health promotion intervention aimed at promoting physical activity or healthy eating (intervention studies); or ii) identify how, or the extent to which, various aspects of young people's lives were associated, with or predicted their participation, in physical activity or healthy eating behaviour, and/or report their views directly (non-intervention studies), or iii) report the results of a systematic review within the scope of the promotion of physical activity or healthy eating for young people.

It was clear from the early stages of literature searching that the volume of potentially relevant studies would be substantial. Therefore criteria were chosen to reduce this to a manageable quantity considering the time available and purposes for which it was commissioned.

Reports needed to pass four rounds of exclusion criteria to be included in the descriptive mapping for either physical activity or healthy eating.

Round one: exclusion on the grounds of scope

There were three 'scope' criteria. Studies were excluded if:

(i) The study's focus, or main focus, was NOT physical activity or healthy eating.

Studies were excluded when they had several outcome measures or foci of interest and the majority were unrelated to physical activity or healthy eating.

(ii) The study did NOT focus on young people[3].
Studies were excluded when they focused on the general population. They were also excluded when the mean age of participants was less than 11 or

[3] The age range of this review means that several large trials of interventions to promote physical activity have been excluded. These include the CATCH trial (e.g. Perry *et al*., 1997); the SPARK trial (Sallis *et al*., 1997); and the daily PE interventions in Australia (e.g. Worsley and Coonan, 1984). These will be included in a future review by the EPPI-Centre on the barriers to, and facilitators of, physical activity amongst children aged 4 to 11.

more than 16. An exception to this was made for systematic reviews which covered older or younger age groups but included a clear section on young people.

(iii) The study was NOT about the promotion of physical activity or healthy eating, or the barriers to, and facilitators of, physical activity or healthy eating.

Intervention studies were excluded if the study population was identified as having an illness or disability (e.g. anorexia, diabetes, obesity[4], learning disability) or was resident in a facility that specialises in working with offenders. Non-intervention studies were excluded when the study population was identified as obese or as having an eating disorder and the study did not examine the factors that might have led to or helped avoid their obesity or eating disorder.

Round two: exclusion on the grounds of study type

There were eleven 'study type' exclusion criteria. Reports were excluded if they were any of the following:(i) editorials, commentaries or book reviews; (ii) policy documents; (iii) surveys solely reporting the prevalence or incidence of physical activity or healthy eating; (iv) non-systematic reviews; (v) non evaluated interventions; (vi) surveys examining a range of health-related behaviours (only some of which are about physical activity or healthy eating); (vii) resources; (viii) bibliographies; (ix) theoretical or methodological studies only; (x) single-case studies; (xi) studies that evaluated the processes of interventions only.

Round three: exclusion on the grounds of location of study

Studies were excluded if they described a non-intervention study (cohort study; case control study; cross-sectional survey) NOT carried out in the UK.

Round four: exclusion on the grounds of language of the report

Only those studies written in the English language were included. Unfortunately, we had insufficient resources to translate reports published in other languages.

2.2 Identification of relevant studies

Different sources of published and unpublished research literature were searched to locate relevant reports.

Searches were conducted on *commercially available electronic databases* (MEDLINE, EMBASE, Psycinfo, ERIC, the Social Science Citation Index, CINAHL); and *specialised bibliographic registers* (BiblioMap, held by the EPPI-Centre, HealthPromis, held by the Health Development Agency (England), the Health Promotion Library Scotland Catalogue, held by the Health Education Board for Scotland, the Cochrane Database of systematic reviews, the UK Health Technology Assessment database, and the Database of Reviews of Effectiveness (DARE), all accessible via the website of the NHS Centre for

[4] Promoting physical activity for the treatment of obesity was beyond the scope of this review. A systematic review of interventions for the treatment of obesity is in progress (Summerbell *et al.,* 2001).

Reviews and Dissemination, University of York; and the Cochrane Controlled Trials Register. The searches covered the full range of publication years available in each database at the time of searching.

For MEDLINE, EMBASE, PsycINFO, ERIC, the Social Science Citation Index and CINAHL, highly sensitive search strategies were developed using combinations of controlled vocabulary and free-text terms restricted to the title or abstract fields. A wide range of terms for physical activity or healthy eating (e.g. sports, exercise, leisure activities, physical fitness, inactivity, nutrition, food preferences, feeding behaviour, diets, health food) were combined with health promotion terms or general or specific terms for determinants of health or ill-health (e.g. health promotion; behavior modification, at-risk-populations, socio-cultural factors, poverty) and with terms for young people (e.g. adolescent, teenager, young adult, youth). The specialised registers were searched with a combination of terms for physical activity and healthy eating with terms for young people. (See appendix A for the full details of the terms used in these search strategies.)

All citations identified by the above searches were downloaded into a ProCite database using BiblioLink data transfer and Biblioscape database software. They were scanned for relevance to the two reviews' mapping inclusion criteria. The bibliographies of relevant studies were scanned to identify further relevant studies.

2.3 Classification of relevant studies

Full reports were obtained and first classified according to a standardised keywording system developed by the EPPI-Centre (Peersman and Oliver, 1997). This classifies reports in terms of the type of study (e.g. outcome evaluation, survey, case control study); the country where the study was carried out; the health focus of the study; the study population; and, for reports describing or evaluating interventions, the intervention site, intervention provider and intervention type.

In order to gain a richer description of the research literature relevant to the promotion of physical activity and healthy eating in young people, reports were then classified according to an additional standardised keywording system, developed for the purposes of this review. This keywording system (details of which can be obtained from the EPPI-Centre on request) classified reports in terms of their topic area, context and characteristics of young people under study, their research design and methodological attributes.

Health topic and characteristics of young people

The report's topic was described in terms of its focus (whether this was on physical activity only, healthy eating only or physical activity and healthy eating together), the health-related context of the study (the rationale presented by the authors for the promotion of physical activity or healthy eating) and its reference to barriers to, or facilitators of, physical activity or healthy eating, grouped into broad categories at three levels: the individual (psychological factors; life events; and physical factors); community (family factors and interpersonal factors); and society (socio-cultural factors and structural factors). The population under study was also described (e.g. unemployed, homeless, other socially excluded group; aged 11-15, aged >18).

Research design

Outcome evaluations were described according to whether they employed the design of a randomised controlled trial (RCT), a non-randomised trial, or a one group pre-test and post-test design.

Process evaluations were described in terms of the processes of interest (the intervention's implementation and/or its acceptability, and/or explaining why an intervention might have been successful or unsuccessful).

Non-intervention research (cohort studies; case control studies; cross-sectional surveys) were described according to whether they aimed: to identify factors which are linked with physical activity or healthy eating; to identify how specified factors relate to physical activity or healthy eating; or to ask young people for their own views on physical activity or healthy eating. Non-intervention research and process evaluations were described according to whether they used qualitative and/or quantitative measures, were cross-sectional or longitudinal in design; and were prospective or retrospective in design.

Systematic reviews were described according to whether they focused mainly on outcome evaluations (addressing questions of effectiveness) or on non-intervention research (asking other research questions).

Methodological attributes

The presence or absence of specified methodological attributes was recorded for each report. One set of attributes described outcome evaluations, another set process evaluations and non-intervention studies and a third set systematic reviews.

Keywords were applied to outcome evaluations to note the presence or absence of: i) a control group; ii) any pre-test data; iii) any post-test data. If reports described controlled trials but did not mention random allocation, it was noted whether study groups were equivalent at baseline. Outcome evaluations were then further described as potentially 'sound' or 'not sound'. An outcome evaluation with random allocation to groups was described as potentially sound only if it reported both pre- and post-test data. Outcome evaluations that did not report random allocation were only described as potentially 'sound' if, in addition to the above, they also had groups that were equivalent at baseline. All other outcome evaluations were described as 'not sound'. We realise these are fairly crude classifications of how studies were reported rather than how they may actually have been carried out, but it was important to have a workable strategy for classifying a large volume of research literature in a short time.

For each process evaluation and non-intervention study (which included studies examining young people's views) a record was made of whether the following were reported, not reported, or unclear: i) the number of people participating in the study; ii) their age range; iii) their sex distribution; iv) socio-economic background; and v) the ethnic make-up of the study population. For process evaluations and for non-intervention studies aiming to represent a specific population, a record was made of: i) the proportion of the original population in the final sample; and ii) characteristics of possible non-

responders. For longitudinal studies only, the reporting was noted of: i) the number of those recruited and lost to the study; and ii) any characteristics of individuals lost to the study.

Methodological attributes of systematic reviews were also described in some detail. Keywords here noted whether or not reports: i) presented the review's aims; ii) provided information on the methods and sources used to retrieve studies; iii) described the use of explicit guidelines for determining which material was included or excluded from the review; iv) described standardised methods for extracting data from included studies; v) described undertaking an assessment of the methodological validity of included studies; vi) proposed specific directives for new research initiatives. In addition, each report's analysis and presentation of data was described as one or more of the following: i) studies weighted (authors based recommendations/conclusions only upon those studies which meet some minimum quality criteria); ii) meta-analysis (authors used meta-analysis to pool data from individual studies); or studies summarised (authors gave a description of and integrated the individual studies included in the review using text and/or a table).

3. MAPPING EXERCISE: RESULTS

Outline of Chapter

This chapter describes the findings of the mapping and quality screening of the research literature relevant to identifying the barriers to, and facilitators of, physical activity among young people. It presents:

- *the content focus of the research (e.g. details of the young people studied; type of barriers or facilitators addressed);*
- *the methodological characteristics of the studies (e.g. study design, data collection methods); and*
- *gaps in the research literature where further research is required.*

These results were used to help identify a sub-set of studies to review in-depth. Because it gives an overview of relevant research, it will be useful as a resource. A searchable database of the studies identified in this chapter is available on-line at http://eppi.ioe.ac.uk.*

This chapter will be of interest to:

- ***researchers** or **commissioners** of research wishing to set an agenda for future inquiry, or considering conducting a similar mapping exercise.*
- ***practitioners**, **policy specialists** and **young people** or their **family** who are interested in the types of research conducted. If specific details are not a concern, these readers may find it helpful to read the summary at the end of the chapter.*
- *those **who want to follow up references to specific types of studies not included in the in-depth review** (e.g. interventions which focus solely on addressing barriers at an individual level).*

Key Messages

- *We screened over 7000 citations to identify 90 studies which met our inclusion criteria for the mapping. These included 42 intervention studies from around the world and 41 non-intervention studies from the UK.*

**Forthcoming*

- *The majority of studies involved young people who were not identified by the study authors as socially excluded or at risk of social exclusion. Only 18 studies focused on young people who were either from ethnic minority groups or families with a low income. Only one of these was from the UK.*

- *The biggest group of barriers and facilitators studied were those classified as individual factors such as knowledge, attitudes or self-esteem.*

- *The majority of interventions were implemented in educational settings and the most common intervention providers were teachers. We only identified seven evaluated interventions implemented in a community setting.*

- *Most intervention studies were carried out in the USA. We only identified six from the UK. The majority of outcome evaluations were controlled trials. Only four were outcome evaluations with integral process evaluations.*

- *Over two thirds of the non-intervention studies sought young people's own descriptions of what helps them and what stops them being physically active.*

3.1 Identification of relevant studies

Our combined search strategies for physical activity and healthy eating yielded 7048 citations. From their abstracts and titles, 614 met the mapping criteria described earlier. Most of the 7048 citations were excluded at this stage because they described 'non-intervention' studies conducted outside the UK; were not concerned with promoting physical activity or healthy eating; or described non-systematic reviews.

The processes involved in this initial screening are shown in table 1.

Table 1: Literature flow

Total citations	7048
Met inclusion criteria on basis of abstract	614
Could not be located/not available in time	132
Full reports available Did not meet inclusion criteria	482 296
Available for inclusion in the mapping	186
Focused on physical activity	96

Full reports were obtained and processed for 482 (79%) of the 614 citations within the time scale for the review. Once full reports had been obtained, a further 296 were found not to meet the inclusion criteria, leaving a total of 186 available for inclusion in the mapping. Of these 186, 96 focused on physical activity.

Of the 132 reports we were unable to collect or process in the time available, some (n=29) could not be found (e.g. the wrong reference details had been cited on bibliographic databases; the British Library informed us that they were not available; or letters written to contacts were not answered). Of the remaining reports not collected or processed (n=103), 29 were not processed in time for our cut-off date for including articles, and the remaining 74 had not arrived by this date, despite having been on order for over three months. A substantial proportion of the 74 were unpublished masters or PhD dissertations (n=26, 35%).

Table 2 shows the productiveness of the different search strategies. Over half of the reports were found on commercially available bibliographic databases (56%). The most productive of these were MEDLINE, CINAHL which PSYCINFO which found 19% (n=35); 17% (n=32); and 18% (n=34) of all reports respectively. An additional 21% of reports were found by searching on specialised registers. The most productive of these was BiblioMap which found 18% (n=34) of all reports. Searching the reference lists of reports was also productive, resulting in 41 additional reports (22% of reports overall). The remaining two reports were identified through personal contact with other researchers and organisations.

Table 2: Number and per cent of physical activity and healthy eating studies found within different bibliographic sources (N=186)

Bibliographic Source	**N**	**%**
'Commercial' bibliographic databases	104	56
Specialised bibliographic registers	39	21
Personal contact	2	1
Reference lists	41	22

3.2 Classification of studies

Study type

As outlined in the methods chapter, we only included in the mapping, reports of those study types which would be relevant to our review questions: intervention studies (outcome evaluations with or without process evaluations), 'non-intervention' studies (cohort studies; case control studies; cross-sectional surveys) and systematic reviews. The 96 reports of physical activity described a total of 90 studies (a number of the studies were described in more than one report and several reports contained more than one study). Table 3 on the next page shows the overall distribution of the 90 studies according to study type.

Just under half the study types (47%) were 'intervention' research. All were outcome evaluations, contained either in reports that evaluated outcomes only (42%) or outcomes alongside processes (4%). Just over two fifths (41%) of the reports were classified as 'non-intervention' research. Most of these were cross-sectional surveys with a smaller proportion of cohort studies. Systematic reviews made up the remainder (8%). These either focused on the effectiveness of interventions (e.g. a review of elementary and secondary school-based cardiovascular disease prevention trials conducted by Resnicow and Robinson, 1997); or offered another type of overview (e.g. a review by Sallis *et al*., 2000, which examined the determinants of physical activity). The relative proportions of 'intervention' and 'non-intervention' studies identified reflects the inclusion criteria employed in this review (non-intervention studies carried out in the UK only were of interest) rather than the status of research on physical activity and young people.

Table 3: Distribution of physical activity studies according to study type (N=90)

	N	**%**
Intervention studies	**42**	**47**
Outcome evaluations *Outcome evaluations with integral process evaluations*	38 4	42 5
'Non-intervention' research	**41**	**45**
Cohort study	4	4
Survey	37	41
Systematic review	**7**	**8**

The context of physical activity

Studies were coded according to the context within which authors placed physical activity (table 4).

Table 4: Number and proportion of studies according to health context/s (N=90)

	N	**%**
Physical activity context only	**56**	**62**
Physical activity and other context(s)	**34**	**38**
Eating disorders	1	1
Heart-health/ Cardiovascular	24	27
Smoking cessation	9	10
Weight-loss	5	5
Cancer prevention	1	1
Other	4	4

NB Numbers for "other context" do not add up to 34 (or 38%) because a single study could cover more than one health context.

Almost two thirds of the studies (56) presented their rationale as being the promotion of physical activity without relating physical activity other specific aspects of health. The authors of the remaining 34 studies most frequently described their rationale in terms of the importance of physical activity to cardiovascular health. Examples include an evaluation by Alexandrov *et al*. (1988) of an intervention to prevent atherosclerosis among 11-year-old schoolchildren in Moscow.

The promotion of physical activity was also studied as a means towards: smoking cessation (e.g. an evaluation authored in 1994 by Hickmann on the outcomes of an intervention "Say YES to Sports and NO to Tobacco" directed at high-risk youth in California); obesity or weight-loss (e.g. Mitchell's 1996 study investigating the role currently played by teenage magazines in shaping adolescent attitudes towards physical activity); and preventing cancer (e.g. Fardy *et al*., 1996 evaluation of a school-based programme of exercise, health education, and behaviour modification on health knowledge, health behaviours, coronary risk factors, and cardiovascular fitness in minority adolescents).

Other rationales included the promotion of positive mental health (e.g. Steptoe and Butler's 1996 cohort study of the association between participation in regular sport or vigorous recreational activity and emotional wellbeing); and increased bone density in young women (e.g. Edwards' 1998 survey of teenage young women' diet and exercise habits which could cause problems with bone mass).

Young people studied

Table 5 shows the findings of the mapping exercise in terms of the age range of populations included in different studies. Just under a third of studies (32%) focused on the exact age range of young people of interest to this review (11 to 15). A larger proportion (58%) covered a broader age range, for example looking at ages spanning from 5-16 or 5-18. This reflects the dominance of school-based studies.

Table 5: Number and proportion of studies (N=90) according to age range

	N	**%**
Under 16 only	29	32
Over 16 only	4	4
Broader age range	52	58
Not specified	5	5

Table 6 on the next page shows the population groups involved in the 90 studies. By far the majority of studies (80%) involved young people who were not identified by the study authors as being from a group that could be defined as socially excluded or in other ways 'at risk'. Only 18 studies involved participants who were either from ethnic minority groups or had low-incomes.

Examples of studies focused specifically on young people on a low-income or from a low income family included an intervention for high school young women in the USA using computers and the internet (Winett *et al.,* 1999). This

aimed primarily at healthier eating but had an increase in the frequency and duration of exercise as an additional goal. Nader *et al.*'s evaluation of the San Diego Family Health Project (1989), also involved low to middle-income Mexican-American and non-Hispanic white families, in a year-long educational intervention designed to promote both healthier eating and exercise patterns.

Table 6: Number and proportion of studies according to target population group (N=90)

	N	**%**
Socially excluded or other 'at risk' group	18	20
Young people in general	72	80

Interventions that were evaluated in populations that involved minority ethnic groups rarely detailed the use of culturally sensitive approaches. One exception, "Dance for Health", an aerobic dance programme designed for 10-13 year old Hispanic and African American young people and described as culturally sensitive, was evaluated by Flores in 1995. Only one non-intervention study focused specifically on ethnicity. Rogers *et al*. (1997) surveyed 12 year olds from 12 ethnic groups in two inner London boroughs, looking at health-related attitudes and behaviours and, in particular, at eating and exercise patterns.

Which barriers and facilitators did the studies focus on ?

Table 7 shows how authors referred to different types of barriers to, and facilitators of, physical activity. There were a total of 163 factors mentioned in the 90 studies.

Table 7: Barriers and facilitators examined in the studies (N=163)

	N	**%**
Individual	**62**	**38**
'Life event' factors	3	2
Physical factors	5	3
Psychological factors	54	33
Community	**35**	**21**
Family factors	23	14
Interpersonal factors	12	7
Society	**45**	**28**
Socio-cultural factors	18	11
Structural factors	27	17
Unfocused/unspecified factors	**21**	**13**

Except for this last example, all of the studies focusing on young people with low-incomes or from ethnic minorities were conducted in the USA. This, and

their small number (only nine studies in total involved young people either with low-incomes or from ethnic minorities), means that we have very little research-based information on which to develop physical activity health promotion for such groups in the UK.

The largest group of factors addressed were those at the individual level (38%), in particular psychological factors (33%). Such factors included knowledge, attitudes, decision-making and problem-solving skills and particular psychological 'traits', 'personality characteristics' or 'ways of responding' such as self-esteem and self-concept. In terms of the focus of individual studies, just over a quarter of the 90 studies identified in the mapping (n=23, 26%) focused solely on individual level factors. For the 42 intervention studies, the proportion focusing solely on these factors was just under a quarter (n=9, 21%) (figures not shown in table).

Interventions classified as focusing solely on these factors tended to be based on classroom teaching sessions where teachers or health promotion practitioners gave young people information about the effects of physical activity and inactivity. For example, high school students taking part in a USA-based intervention evaluated by Goldfine and Nahas (1993) were given skill-related physical education classes alongside physical education course work consisting of lectures, lab-work and reading. The curriculum focused on the relationship between exercise and cardiorespiratory fitness, body composition, flexibility, strength and muscular endurance. A control group of students received PE skill training only. Another intervention evaluated in the USA by Fardy *et al*. (1995, 1996, 1997) instead treated physical activity as one component of healthy behaviour and provided a 10-week health promotion curriculum of classroom education modules in physical activity, nutrition, smoking cessation, stress management and personal problem solving alongside an exercise programme of walking and running.

Fewer studies addressed factors at the community level such as family characteristics (14%) or interpersonal relationships (7%). Examples included evaluations of interventions involving parents in the promotion of physical activity, both through joint completion of homework assignments and parents signing up to take part in regular exercise with their children (e.g. Cohen *et al*., 1989; Baranowski *et al*., 1990a, 1990b; Hopper *et al*., 1992; Leslie *et al.,* 1999; Nader *et al*., 1989). Also a non-intervention study (Biddle and Goudas 1996) surveyed young people about their intentions for, and levels of, physical activity, their perceptions of adult encouragement and a number of socio-cognitive variables so as to predict the influence of attitudes and perceptions of social support on levels of activity.

Few studies focused on the role of wider society in physical activity and healthy eating (socio-cultural, 11%; structural, 17%). Those classified as addressing socio-cultural factors included several of the interventions detailed above that involved ethnic minority groups. Others were based upon expectations about shared cultural meanings between peers and used older or same-age young people to deliver educational programmes to other young people (e.g. Cohen *et al.,* 1989; Kelder *et al.,* 1993). The Minnesota Heart Health Programme (evaluated in a number of studies including Kelder *et al.*, 1993) established citizen's panels to help develop health promotion materials appropriate for the community.

Examples of interventions addressing the influence of structural factors include two evaluations of programmes that aimed to modify the environment of PE classes (Lirgg, 1992; Marsh and Peart, 1988). The first of these compared the effects of same-sex and co-educational PE curricula on self-confidence and young people's perceptions of their class environment. In the second, young Australian women aged 11 to 24 were provided with either competitive or co-operative physical fitness training programmes and assessed for changes in levels of fitness and physical and other self-concept measures. The Minnesota Heart Health Programme (Kelder *et al*., 1993) increased the provision of screening for cardiovascular risk factors in the community and worked with restaurants and grocery stores on improving food labelling to encourage "heart-healthy eating". The study by Perry *et al* (1987) of one component of this programme describes how young people in secondary schools developed suggestions for heart-healthy school policies and presented these to school management and teaching staff.

In the study of a UK-based intervention that aimed to modify structural barriers and facilitators of physical activity (Moon *et al*., 1999a), "Healthy School" awards were offered by local education authorities to schools which were considered to have improved their whole school approach to personal and community health promotion, with the promotion of physical activity being one component of this.

3.3 Characteristics of intervention studies

This section discusses the substantive and methodological characteristics of the 42 intervention studies which were among the 90 physical activity studies found as part of the mapping as a whole (see table 3).

Country in which studies were conducted

Table 8 shows the number and proportion of the 42 intervention studies according to the country in which the intervention was implemented.

Table 8: Number and proportion of intervention studies according to country (N=42)

	N	**%**
USA	29	69
UK	6	14
Australia	4	10
Rest of Europe*	2	5
Rest of World**	1	2

* Norway, Russia
** Pakistan

Most of the intervention studies were carried out in the USA (69%). Six (14%) were from the UK. Australia and Europe outside of the UK accounted for 10% and 5% of the studies respectively and other individual countries around the world, 2%. These figures may reflect bias within the bibliographic sources searched towards studies published within the USA and the UK; there is also clearly likely to be a bias as a result of our inclusion criteria restricting studies to those written in the English language only.

Intervention site

Table 9 shows the settings in which the interventions were implemented in the 42 intervention studies. As each intervention could involve more than one site, a total of 49 sites are covered.

Table 9: Intervention sites (N=49) described in the intervention studies (N=42)

	N	**%**
Community	7	14
Educational setting	35	72
Health care setting	3	6
Home	4	8

Educational settings (72%), in particular secondary education settings (n=27, 55% - not shown in table), were the most frequent sites for interventions. This means that most physical activity promotion interventions were classroom-based, although some did involve intervention programmes using a whole-school approach, for example, by implementing physical activity promoting school policies (e.g. Moon *et al*., 1999a).

A minority of interventions were delivered in community sites (7%), in a health care setting (6%), or the home (8%). These included three community outreach projects (Colchico *et al.,* 2000; Hickmann, 1994; Warburton, 1998), two health promotion campaigns run in primary care settings (Badruddin *et al*., 1993; Edwards, 1998), and two interventions that aimed to involve family members in young people's physical activity through homework assignments and increased parental participation in physical activity (Hopper *et al.,* 1992; Vandongen *et al.,* 1995).

Intervention provider

Table 10: Intervention providers (N=58) described in the intervention studies (N=42)

	N	**%**
Community worker	1	2
Health professional	11	19
Peer	6	10
Researcher	3	5
Teacher	25	43
Computer	1	2
Health promotion practitioner	5	9
Lay therapist	2	3
Unspecified	4	7

Table 10 shows the range of intervention providers involved in delivering physical activity promotion. As each intervention could involve more than one provider the intervention studies covered a total of 58 different types of provider.

The biggest single category of providers was teachers (43%), reflecting the fact that most interventions were implemented in school settings. A substantial number of interventions were delivered by professional groups traditionally associated with providing health services (health professionals made up 19% of all providers, and health promotion and lay practitioners together 12%). Young people themselves made up 10% of those delivering interventions. Computers provided the intervention in one study: Winett *et al.* 1999 describe an internet-based intervention which provided young women with interactive educational modules that included assessments, prescriptive strategies and personalised goals and feedback on their eating and physical activity patterns. Only one evaluated intervention was explicitly described as provided by community workers (Hickmann, 1994).

3.4 Methodological attributes of intervention studies

Outcome evaluations

Thirty-eight of the intervention studies were evaluations of physical activity outcomes. Table 11 shows the design of the outcome evaluations. Just over four-fifths employed a control group; 53% were randomised controlled trials (RCTs).

Table 11: Number and proportion of outcome evaluations according to design (N=38)

	N	**%**
Controlled trial	**31**	**82**
Randomised controlled trial	20	53
Non-randomised controlled trial	11	29
One group pre- and post-test	**7**	**18**

Using the classification described earlier (equivalent intervention and control groups, pre- and post-test data), almost three quarters of the outcome evaluations were judged to be ‘potentially sound’ (n=28, 74%) and just over one quarter as ‘not sound’ (n=10, 26%).

Only four of the 38 outcome evaluations were carried out in the UK (Edwards, 1998; Lloyd and Fox, 1992; Moon *et al.,* 1999a; Warburton, 1998). Only one of these was classified as ‘potentially sound’ (Moon *et al*., 1999a).

Process evaluations

We identified a total of four process evaluations (see table 3). All of these were ‘attached’ to outcome evaluations, that is the studies were concerned with evaluating both intervention processes and outcomes. The process evaluations were classified according to which intervention processes they evaluated.

Two of the four (Baranowski *et al*., 1990a; Perry *et al*., 1987) examined the acceptability of an intervention to young people. Perry *et al*. for example, looked at participants' views of a teacher- and peer-delivered high school curriculum designed to promote healthy eating and physical activity.

Two of the process evaluations (Baranowski *et al*., 1990a; Warburton, 1998) asked participants in the interventions for background information about physical activity so as to examine why an intervention might be effective or not. For example, the second of these studies, which evaluated a planned exercise programme for 15 and 16 year old pupils, asked this group to highlight the benefits of exercise (e.g. weight control, fitness, general improvements in health) they felt were most important.

Three of the four studies (Baranowski *et al*., 1990a; Moon *et al*., 1999a; 1999b; Perry *et al*., 1987) examined the processes involved in the implementation of the intervention. Perry *et al*. (1987) looked at this issue in some detail, asking students whether they liked having university staff and peer leaders delivering training on physical activity, if they thought the right people had been selected to be peer leaders and if they thought the peer leaders' training had been adequate.

Tables 12 and 13 show some of the methodological attributes of the four process evaluations. Three (75%) used cross-sectional designs. Studies were split evenly as to whether they collected quantitative or qualitative data. No study collected both types.

Table 12: Number and proportion of process evaluations according to methodological attributes (N=4)

	N	**%**
Study design		
Cross sectional	3	75
Longitudinal	1	25
Total	4	100
Type of data collected		
Qualitative	2	50
Quantitative	2	50
Total	4	100

Table 13 shows that the quality of the reporting in the process evaluations varied enormously. Whilst three out of the four studies reported the age of young people in their sample, the number of participants or the sex of participants were reported in only two studies. Only one study (Moon *et al*., 1999a; 1999b) described either the sample's ethnicity or socio-economic background. This study, in fact, was the only one to provide detail in all five of these areas. None of the process evaluations provided a response rate or any details on those young people who chose not to take part in the study. This lack of information is a problem when it comes to judging the reliability of study findings.

Table 13: Number and proportion of process evaluations reporting sample characteristics (N=4)

	N	**%**
Sample number	2	50
Age	3	75
Sex	2	50
Ethnic group	1	25
Socio-economic background	1	25
Response rate	0	0
Non-responders' details	0	0

3.5 Methodological attributes of non-intervention studies

This section looks at the 41 studies classified as UK-based non-intervention studies (see table 3). These included four cohort studies, and 37 cross-sectional surveys. These studies asked questions regarding what factors relate to or predict physical activity. Some of these used regression analysis to examine interrelationships among several potential factors, aiming to provide a picture of what aspects of young people's lives might be the most important with regard to their levels of physical activity. Other studies (n=28, 68%) sought young people's own descriptions of what helps them and what stops them being physically active.

As with the process evaluations described in the previous section, there were general problems with small, non-representative samples and poor reporting of participant details.

Table 14 shows the method of data collection featured in the non-intervention studies.

Table 14: Number and proportion of non-intervention studies (N=41) according to their approach to collecting data

	N	**%**
Data collection		
Qualitative	11	27
Quantitative	24	58
Qualitative and quantitative	6	15

Most of the data collection in the intervention studies was quantitative (80%), using both self-completion questionnaires and semi-structured interviews. In 30 studies this was the only form of data collection. In 17 cases, data were collected using qualitative methods, usually through semi-structured or in-depth interviews. Six studies collected both forms of data.

Table 15 gives similar methodological information for the non-intervention research as for the process evaluations earlier. It shows considerable variability in the reporting of sample number and demographic characteristics. All except four of the studies reported the number of young people in their sample, and a large proportion reported on their samples' age and sex (88% and 83% respectively). However, only a minority of non-intervention studies reported on ethnicity (20%) or socio-economic background (24%).

Table 15: Number and proportion of non-intervention studies reporting sample characteristics (N=41).

	N	**%**
Sample number	37	90
Age	36	88
Sex	34	83
Ethnic group	8	20
Socio-economic background	10	24
Response rate	9	22
Details of non-responders	2	5

Just under a quarter of the studies (22%) reported a response rate for their sample, but less than 5% provided any details on those young people who chose not to part in the study. Although the reporting of response rate in these non-intervention studies compares favourably with the zero level seen in the process evaluations described earlier (see table 13), yet again these levels of reporting make it extremely difficult to assess whether the results or conclusions of these studies are representative of the group of young people from whom the samples were drawn.

Drop-out rates were reported in two of the four studies where this methodological aspect was relevant (data not shown in table). All but one of these studies, however, failed to give any detail about those known to have dropped out. This makes it difficult to assess the extent of any bias due to differences between those dropping out and those who participated in data collection.

3.6 Characteristics and methodological attributes of (potential) systematic reviews

A total of seven reports of potential systematic reviews were identified. These seven reviews were classified as either reviews of effectiveness (n=5) or reviews of non-intervention research which were not concerned with effectiveness (n=2). There was a great deal of variation in the methods and reporting of these reviews.

Reviews of effectiveness

Of the five reviews of effectiveness, three covered interventions to promote physical activity alone (Dishman and Buckworth, 1996; Pender, 1998; Stone *et al*., 1998) and two focused, in addition, on healthy eating (Hardeman *et al*., 2000; Resnicow and Robinson, 1997).

Data analysis was primarily by narrative synthesis (n=4), although in three cases meta-analysis was used (Dishman and Buckworth, 1996; Resnicow and Robinson, 1997; Smolak *et al*., 2000). None of the reviews focused on the same age range as this review (young people aged 11 to 16 only). Instead, they looked at studies involving ages 8-15 only (Resnicow and Robinson, 1997), children under 11, young people aged between 11 and 16 and those aged over 18 (Hardeman *et al*., 2000; Stone *et al*., 1998).

Table 16 presents data on the methodological attributes of the reviews. All but one of the reviews reported their aims. Four provided details of the search strategy used as well as detail about the inclusion criteria employed: Dishman and Buckworth, (1996); Hardeman *et al*. (2000); Resnicow and Robinson, (1997); and Stone *et al*. (1998)).

Table 16: Methodological attributes of the effectiveness reviews (N=5)

	N	**%**
Aims		
Reported	4	80
Not reported or unclear	1	20
Search strategy		
Reported	4	80
Not reported or unclear	1	20
Inclusion criteria		
Reported	4	80
Not reported or unclear	1	20
Quality assessment		
Reported	1	20
Not reported or unclear	4	80
Standard data extraction		
Reported	1	20
Not reported or unclear	4	80
Future directives		
Reported	5	100
Not reported or unclear	0	0

Only one review, however, provided details on the methods used to assess the quality of the primary studies, or described using a standard process for extracting data (Dishman and Buckworth, 1996). All reviews provided recommendations for research and practice.

Reviews of non-intervention research

Two reviews of non-intervention research were identified. The first reviewed studies of factors correlating with physical activity in young people (Sallis *et al*., 2000). The authors of this review stated its aims and its inclusion criteria and described the use of standardised data extraction methods. However its search strategy was unclear and there was no evidence of quality assessment. Its recommendations for research and practice were also unclear.

The second, Smolak *et al.* (2000), was concerned with the relationship between athletic participation and eating problems amongst female athletes. The aims of the review were stated, but the search strategy was not clear, nor were the inclusion criteria or quality assessment procedure was used, or data extraction methods. As with the review by Sallis *et al*. (2000), recommendations were not clear.

3.7 Summary

There has been a considerable amount of research activity in the area of physical activity and young people. Searches for both healthy eating and physical activity health promotion studies produced 7048 citations of which, 614 were deemed to potentially meet the inclusion criteria on the basis of title or abstract. Of these, 186 reports were deemed to meet our inclusion criteria and were available within the relevant time frame for this review. A total of 90 individual studies focused on physical activity.

Questions about potential barriers to, and facilitators of, physical activity have been addressed in a wide range of study types. The studies included 42 evaluations of interventions, 41 reports of ‘non-intervention' research, and seven systematic reviews.

Only 28% (N=18) of the 90 studies identified in the mapping appear to address issues of social exclusion, with all but one of the studies focusing on participants from ethnic minorities or with low incomes originating outside of the UK and almost 71% of evaluated interventions being implemented primarily by teachers in school settings, thereby potentially missing a large proportion of socially excluded young people.

Just under a quarter of the 42 intervention studies identified in the mapping appeared to evaluate interventions that addressed barriers to, and facilitators of, physical activity solely at an individual level.

The reporting of study methods was highly variable for the non-intervention studies in the mapping, with details of sample numbers, age and sex each provided in over 80% of cases, but ethnic group or socio-economic

background each reported in less than a quarter. Over 80% of the mapping's 38 outcome evaluations had a controlled trial design. Just over half were randomised controlled trials. Using the reporting of equivalent intervention and control groups and both pre- and post-test data as a measure of methodological soundness, just under three quarters were judged to be "potentially sound".

Of the seven potentially systematic reviews, five examined outcome evaluations (effectiveness reviews) and two examined non-intervention research. There was a great deal of variation in the methods and reporting of these reviews. Only one of the reviews of effectiveness detailed the methods used to assess the quality of studies examined or described using a standard method for extracting data.

The next chapter (chapter 4) of the report details the methods used to produce the rest of this report and the following two chapters (chapters 5 and 6) describe the findings of the two sub-set of studies which went on to be reviewed in-depth. How we got from this mapping to the two sub-sets of studies to review in-depth is described in the first section of chapter 4.

4. IN-DEPTH REVIEW: METHODS

Outline of Chapter

This chapter describes the methods used in the in-depth review and the process used to select studies. It explains how the results of the mapping exercise were considered, together with suggestions made by the project's funding body and steering group to:

- ***prioritise the focus of the in-depth review*** *(on barriers and facilitators at a community or society level)*
- ***select the most appropriate study types to include*** *(privileging UK studies which seek young people's own descriptions of what helps them and what stops them being physically active; and intervention studies of a high methodological quality)*

The inclusion criteria, data extraction and quality assessment methods specific to each study type are then described in turn.

This chapter will be of interest to:

- ***any readers*** *who want to evaluate in detail how this stage of the review was conducted in order to assess the reliability and validity of the reviews findings.*
- ***researchers or others*** *interested in how the results of a mapping and quality screening exercise can be applied within a systematic review, and of different study types which can be included in a systematic review.*
- ***policy specialists, practitioners*** *and* ***young people or their parents.*** *These groups may find section 4.1 of most interest since this describes how different sources/stakeholders had an input into defining the most appropriate and relevant literature to review in-depth.*

4.1 From mapping the literature to in-depth review

The mapping exercise identified many studies relevant to the task of identifying barriers to, and facilitators of, physical activity. This provided a basis for deciding on the most appropriate types of interventions to review and other types of study to include in the in-depth review. We took advice on how to focus the in-depth review from the EPPI-Centre's Steering Group and from the project's funders.

Because the review question was concerned with identifying barriers to, and facilitators of, physical activity, a range of research designs are relevant. We

hypothesised that barriers and facilitators could be identified in the following ways:

(i) by examining those interventions shown to be effective in promoting young people's participation in physical activity (i.e. which barriers did they aim to reduce/remove? which facilitators did they build upon/show synergy with?);

(ii) by examining the barriers and facilitators of interventions shown to be harmful (i.e. those which lead to a decrease in physical activity); and

(iii) by examining research which did not aim to evaluate specific interventions, but aimed to describe which factors influence young people's participation in physical activity in a positive or negative way.

We decided to focus on interventions that aimed to address community and society barriers and facilitators (i.e. those that make a change at the community or society level, as opposed to solely aiming to influence individual young people so that they modify their own health behaviour). Such interventions ranged from the provision of additional physical or material support - for example free or voucher-supported exercise facilities or modifications to the physical environment to encourage physical activity - to organizational changes - such as modifications to the structure of school PE lessons (the introduction of single-sex or mixed classes; teacher training to improve instruction skills; varying the balance of competitive and non-competitive sports) and broader attempts to change the ethos of schools or other institutions. They could include both the development of education/ support for parents and others in the community to promote community-wide engagement in physical activity, and policy and legislation changes at local or national levels. This community or society level focus is currently considered a priority for the development of policy.

For these intervention studies, further decisions about inclusion were made regarding the quality of outcome evaluations and the type of outcomes assessed. We have included only those outcome evaluations which were judged potentially sound, that is, they included a control group, reported pre and post intervention data and, if not randomised, demonstrated equivalence between groups before intervention; and only those evaluations that measured the effects of interventions on behavioural outcomes or health status, as opposed to attitudes, knowledge, awareness, beliefs or intentions as regards physical activity.

In addition to intervention studies, we also included a wide range of other studies that did not aim to evaluate specific interventions, but aimed to describe which factors influence young people's participation in physical activity in a positive or negative way. These, however, had to have sought *young people's own descriptions of what helps them and what stops them being physically active* rather than inferring their experiences primarily through *researcher description and characterisation of young people.* In other words we focused on those studies which report young people's views[5].

Although we identified seven potentially systematic reviews in the mapping exercise we did not include their findings in the in-depth review. This was

[5] For a fuller explanation of this decision please see chapter 1 under 'Approach taken in this review'.

because reviewing systematic reviews was found to be problematic during the first review conducted as part of this series (Harden *et al*., 2001). During this review we found that the variable scope and methods used to find, extract data from, and quality assess primary studies across previous systematic reviews, meant that the conclusions and recommendations from different reviews were often conflicting. This problem was compounded by the lack of detail provided in the reviews of the types of interventions included. We did, however, decide to use these reviews as a resource for identifying additional primary studies not identified by our searches.

In summary, the in-depth review considered:

a) evaluations that measure the effect on health behaviour or health status of interventions aiming to make changes at the community or society level.

b) non-intervention research focused on young people's views.

All the studies included in the in-depth review were about young people aged 11 to 16 years, the promotion of physical activity and published in English. Non-intervention studies were restricted to UK studies published in or after 1990. This was because the strength of non-intervention studies in illuminating barriers and facilitators lies in their ability to describe the specific contextual factors influencing young people at this time in the UK.

The remainder of this section describes for each study type in turn the process of inclusion and exclusion of studies, data extraction and quality assessment.

4.2 Outcome and process evaluations

The first type of research to be considered for in-depth review was evidence from outcome and/or process evaluations of interventions to improve young people's physical activity.

Inclusion and exclusion criteria

Outcome evaluations and the process evaluations linked to them were first assessed to determine if they were aiming to make a change at the community or society level. To do this we detected all the outcome evaluations classified as either: i) making reference to interpersonal, family, socio-cultural and structural barriers to, or facilitators of, physical activity; or ii) evaluating interventions including one or more of the following types of component (environmental modification, incentives, parent training, resource access, screening, service access, social support, legislation, regulation).

This sub-set of outcome evaluations was then screened independently by two reviewers using the following in-depth review inclusion criteria:

1 Study has as its main focus the promotion of physical activity;

2 Study has as its main focus young people (aged 11 to 16 years);

3 Study uses a comparison or control group; reporting of pre-test and post-test data, and if a non-randomised trial, equivalent baseline measures;

4 Study is of an intervention that aims to make a change at the community or society level;

5 Study measures behavioural and/or physical health status outcomes.

All outcome evaluations meeting these criteria went on to the data extraction and quality assessment phase of the review. The process evaluations which were 'attached' to these outcome evaluations also went on to the data extraction phase of the review. These did not, however, undergo any quality assessment.

Data extraction and quality assessment

A standardised data extraction framework was used, the EPPI-Centre's 'Review Guidelines' (Peersman *et al.,* 1997). These guidelines enabled reviewers to extract data on the development and content of the intervention evaluated, the design and results of the outcome evaluation, details of any integral process evaluation and data on the methodological quality of the outcome evaluation. Data were entered onto a specialised computer database (EPIC).

These procedures and the criteria used for assessing methodological quality are the same as those described in previous EPPI-Centre reviews (e.g. Oakley *et al*., 1996; Peersman *et al*., 1996; Peersman *et al.,* 1998), including our two early reports on the methodology of sexual health interventions (Oakley and Fullerton, 1995, Oakley *et al.,* 1995a). Eight methodological qualities were sought for:

(i) Clear definition of the aims of the intervention.

(ii) A description of the study design and content of the intervention sufficiently detailed to allow replication.

(iii) Use of random allocation to the different groups, including to the control or comparison group(s).

(iv) Provision of data on numbers of participants recruited to each condition.

(v) Provision of pre-intervention data for all individuals in each group.

(An exception was made for those studies using the Solomon four-group design (Campbell and Stanley, 1966). In this design, intervention and control/comparison groups are further randomised to receive pre-intervention surveys or not. This means that the usual range of pre-intervention data is not available for half the participants in each group.)

(vi) Provision of post-intervention data for each group.

(vii) Attrition reported for each group.

(viii) Findings reported for each outcome measure indicated in the aims of the study.

Following the procedures used in other EPPI-Centre reviews, and building on other work (Loevinsohn 1990; Oakley and Fullerton 1995; MacDonald *et al*., 1992), 'core' criteria from the above list were selected in order to divide the outcome evaluations into two broad groups: 'sound' and 'not sound'. 'Sound' outcome evaluations were those deemed to meet the four criteria of:

1. Employing a control/comparison group equivalent to the intervention group on socio-demographic and outcome variables.

2. Providing pre-intervention data for all individuals/groups as recruited into the evaluation.

3. Providing post-intervention data for all individuals/groups.

4. Reporting on all outcomes.

'Sound' outcome evaluations were considered to show sufficient methodological qualities to be able to generate potentially reliable results about the effectiveness of health promotion interventions.

4.3 Non-intervention studies

The second type of research to be considered for in-depth review were those studies that aimed to elicit young people's own views about what stops them or helps them being physically active. Knowledge of young people's own views is essential for the development of relevant, acceptable and potentially effective policies and practices aiming to promote their health/prevent ill-health, yet is often overlooked in favour of 'expert' views or research findings that have not been derived from gathering the views of young people themselves.

Inclusion and exclusion criteria

In order to be classified as reporting young people's views, a study had to:

(i) examine young people's attitudes, opinions, beliefs, feelings, understanding or experiences about physical activity (rather than their health status, behaviour or factual knowledge);

(ii) access views about: young people's definitions of and/or ideas about physical activity; factors influencing their own or other young people's participation in physical activity, and their ideas about ways of promoting this; and

(iii) privilege young people's views: studies had to present young people's views directly as data that are valuable and interesting in themselves, rather than as a route to generating variables to be tested in a predictive or causal model (e.g. measuring a range of attitudes or experiences to see whether/how they predict physical activity levels).

Studies published before 1990 were excluded in order to maximise the relevance of the review findings to current policy issues.

These inclusion and exclusion criteria differed from those for outcome evaluations in that we did not restrict inclusion of studies according to their focus on a particular kind of barrier or facilitator, since we felt it was important to include all studies which started from the point of view of what young people themselves felt to be important to them.

Identification of additional reports

Despite our extensive search strategy (see chapters 2 and 3), we found that we had only identified a handful of relevant studies. Although this may have reflected the paucity of available studies, we decided to make a special effort to try to locate more studies.

We therefore asked all authors of the studies we had found so far whether they themselves had conducted other similar studies, had further reports of the studies we had found or whether they knew of other relevant studies. We visited the websites of organisations involved in commissioning, undertaking or cataloguing research on physical activity or young people (for example, The Sports Council for England, The Trust for the Study of Adolescence). We also attempted to obtain potentially relevant references cited in already identified reports. These contacts have led to only one more study to date.

Data extraction and quality assessment

All studies meeting the above inclusion criteria were examined in-depth. A standardised data extraction and quality assessment framework was used. It had been piloted in previous EPPI-Centre reviews of peer-delivered health promotion for young people (Harden *et al.,* 1999a) and the barriers to, and facilitators of, mental health in young people (Harden *et al.,* 2001). The criteria proposed by four research groups to assess the validity and reliability of 'qualitative' research, presented in Oakley (2000), were 'amalgamated' based on their commonalities (Boulton *et al*., 1996; Cobb and Hagemaster, 1987; Mays and Pope, 1995; Medical Sociology Group, 1996). The quality criteria across the four sets were found to converge on seven 'themes' which related to the different stages of the research process: theoretical framework and or background to the study; formulation of aims or research questions; context of the research; the sample; methodology; analysis of data; and interpretation of data. For each of these seven themes the most commonly used criteria across the four sets was used.

These criteria have been modified slightly for the current series of reviews. The 'analysis of data by more than one researcher' criterion, which aimed to provide an assessment of the reliability and validity of data analysis, was changed to a more general statement of whether any attempts had been made to establish the reliability/validity of data analysis. This was in recognition of the fact that there are many different ways in which researchers can attempt to establish the reliability and validity of data analysis within qualitative research; and much of it is funded in such a way that data-analysis is the responsibility of one researcher only.

Each study was thus assessed according to the following seven quality criteria:

(i) Explicit account of theoretical framework and/ or inclusion of a literature review: did the report provide an explanation of, and justification for, the focus of the study and the methods used? This question was intended to assess whether the research had demonstrated how it was informed by, or linked to, an existing body of knowledge.

(ii) Clearly stated aims and objectives: did the report explicitly and clearly state the aims of the study?

(iii) A clear description of context: did the report adequately describe the specific circumstances under which the research was developed, carried out and completed?

(iv) A clear description of sample: did the report provide adequate details of the sample used in the study including details of sampling and recruitment? This should include presentation of socio-demographic data and data on any other salient factors so that an assessment of who was included and excluded from the research could be made to aid interpretation and judgements about the validity and generalisability of the findings.

(v) A clear description of methodology, including data collection and data analysis methods: did the report provide an adequate description of the methods used in the study including its overall research framework, methods used to collect data and methods of data analysis? This question assessed how the methods shaped the findings of the study, again to aid interpretation and judgements about the validity and generalisability of findings.

(vi) Evidence of attempts made to establish the reliability and validity of data analysis: researchers needed to show that some attempt had been made to assess the validity and reliability of the data analysis.

(vii) The inclusion of sufficient original data to mediate between data and interpretation: did the report present sufficient data in the form of, for example, data tables, direct quotations from interviews or focus groups, or data from observations, to enable the reader to see that the results and conclusions were grounded in the data? Could a clear path be identified between the data and the interpretation and conclusions?

The 'quality' criteria were considered to represent the first step to generating a way of assessing the validity and reliability (or 'trustworthiness') of the results and conclusions of research which aims to answer questions other than effectiveness. Essentially they provide a framework for considering whether enough information has been provided in order to judge the framework of the study, context, sample, methodology, data analysis and data interpretation used within the research took into account or, at least, made explicit, any possible alternative explanations for the results shown and/or conclusion drawn. In this respect, the quality assessment of non-intervention research differs from the methodological quality assessment of the outcome evaluations that is also described in this report. The criteria applied to non-intervention

research were not used to generate a sub-set of studies from which 'reliable' conclusions could be drawn. Rather, the aim was to provide the reader with a synthesis, within an explicit framework of methodological quality, of the findings of the studies examining young people's views and their implications for what they tell us about barriers to, and facilitators of, physical activity amongst young people and the development of interventions and promote this.

5. IN-DEPTH REVIEW: The outcome Evaluations

Outline of Chapter

This chapter presents the results of the data extraction and critical appraisal of the intervention studies included in the in-depth review.

- *Sections 5.1 and 5.2 describe the characteristics and development of the interventions.*
- *Section 5.3 describes the methodological quality of their evaluations.*
- *Section 5.4 considers the findings from the outcome evaluations and any associated process evaluations. This is based on the sub-set of outcome evaluations judged to be methodologically sound.*

This chapter should be read by:

- ***practitioners**, **policy specialists, young people** or their **parents** and others who are interested in what kinds of interventions are effective for promoting physical activity (in particular section 5.4); and*
- ***researchers** or **research commissioners** who are interested in the methodological quality of evaluations and how they might be improved in the future(in particular section 5.3).*

Key Messages

- *Twelve outcome evaluations met the criteria for in-depth review.*
- *None of the interventions were provided specifically for young people who could be considered to be socially excluded. However, three studies specifically focused on ethnic minority groups and a further three studies included ethnically diverse populations.*
- *Only three interventions were based on what young people said they wanted or needed to promote their participation in physical activity. Young people had a role in the development of the intervention in only four studies.*
- *Particular methodological problems were: failure to report pre and post intervention data on all individuals; non-equivalent study groups; and not reporting the impact of the intervention all outcomes targeted*

- *Only four of these were judged to be methodologically sound. These studies evaluated three interventions. One of these was implemented in the UK, the other two in the USA. All were implemented in schools.*

Clearest findings were:

- *A 'whole school' approach to promoting health which involved encouraging schools to make changes in their organisation structure and philosophy was found to be effective in increasing physical activity participation amongst young women aged 15 to 16.*

- *The associated process evaluation revealed that the barriers to implementing a whole school approach were: lack of time and resources; inadequate staff training; and lack of engagement of support staff. Facilitators were: commitment of staff and management; staff concern for pupil's health and pupil's own awareness of health.*

- *Teacher led sessions on smoking, physical activity and healthy eating, delivered throughout the school year for five years, combined with parental involvement and risk factor examination (e.g. cholesterol testing), were effective for reducing cholesterol levels and blood pressure in a low income sample of mostly African American or Hispanic young people aged 14 years.*

- *Author's reflections on the intervention revealed several barriers to implementation: training of teachers was insufficient to motivate teacher s to deliver the intervention with enthusiasm and skill; school administrators were reluctant to support the intervention; enthusiasm of parents and young people waned over course of the intervention; and the risk factor component was perceived to have created too much disruption in schools.*

- *A 10 session peer-led intervention for 14 to 15 year olds in the USA which provided education on the benefits of physical activity and healthy eating, and opportunities for group work on exploring environmental determinants, did not result in increased participation in physical activity. However, young women in the intervention group had more favourable intentions to participate in the future.*

- *The associated process evaluation revealed that the peer leaders enjoyed their experiences and were well received by intervention participants. Young women seemed to enjoy the intervention more than the young men.*

5.1 Characteristics of physical activity promotion evaluated in outcome evaluations

A total of 20 outcome evaluations fell within the scope of our in-depth review as they evaluated the behavioural and/or physical health status outcomes of

interventions that aimed to make a change at the community or society level. Only 12 of these however, met the methodological inclusion criteria (employed a comparison and control group, pre and post test data, and for non-randomised trials, baseline measures equivalent). Thus 12 studies were reviewed in-depth. These were all published in peer reviewed journals, with the majority (n=11) published prior to 1995. A total of 10 (83%) studies were conducted in the USA, with one in the UK and one in Australia.

The number of studies reviewed does not equate with the number of reports providing details of those studies. Some studies were detailed in more than one report, and one report described two separate outcome evaluations of the same intervention. These two evaluations (of the 'Know Your Body' programme), are described in total in three reports: Walter *et al*. (1985); Walter *et al*. (1988); Walter (1989). The two evaluations were conducted in two demographically diverse areas of New York city, the Bronx and Westchester County and are hereafter referenced as Walter I (1989) and Walter II (1989) respectively.

All studies focused on both physical activity and healthy eating. In some studies there were additional emphases on cardiovascular disease, tobacco use, accidents, obesity, alcohol and illicit drug use.

Table 17 shows the intervention setting and provider type. As each intervention could have more than one setting or provider. The outcome evaluations covered a total of 24 settings and 23 providers.

Table 17: Intervention setting (N=24) and intervention provider (N=23) in physical activity outcome evaluations: All included outcome evaluations (N=12)

Intervention setting (N=24)	**N**	**%**
Primary education	9	38
Secondary education	7	29
Home	4	17
Community	2	8
Health care unit – specialist clinic	1	4
Health care unit – primary care	1	4
Intervention provider (N=23)	**N**	**%**
Teacher/lecturer	10	44
Other (students, physical education specialists, local education authority, parents)	4	18
Health professional	3	13
Peer	2	9
Community in general	1	4

Community worker	1	4
Health promotion practitioner	1	4
Researcher	1	4

Most of the studies were set in primary and secondary schools, and less often in the home, the community in general, or in health care settings. A range of people were responsible for delivering the interventions, including teachers, peers, community members and researchers. Studies could also involve more than one setting and provider. For example, the intervention by Hopper *et al*. (1992) took place in the primary school setting and also involved activities within the children's homes with their parents. Similarly, in the 'Slice of Life' intervention (described in two reports: Perry *et al.* (1987) and Klepp *et al*. (1986) and hereafter referenced as Perry *et al*. (1987)), teachers were involved in the overall application of the intervention, whilst peer educators were responsible for delivering the class based sessions.

A wide range of intervention types were employed, as illustrated in table 18. As each intervention could consist of more than one type, the outcome evaluations covered a total of 57 types.

Table 18: Intervention types (N=57) in physical activity outcome evaluations: All included outcome evaluations (N=12)

	N	**%**
Information/education	12	21
Physical activity	11	19
Environmental modification	7	12
Practical skill development	5	9
Parent training	5	9
Screening	5	9
Social support	3	5
Bio-Feedback	3	5
Increased access to services	1	2
Increased access to resources	1	2
Family therapy	1	2
Advice/counselling	1	2
Other (community organisation, citizen task forces, food tasting)	2	3

The majority involved some form of information provision, as well as participation in physical activities. For example, the young people participating in the study by Vandongen *et al.* (1995) attended lessons which aimed to improve knowledge (as well as attitudes, and behaviour), and also took part in fitness activities including running, relays, skipping, and movement to music.

Interventions were also classed as involving environmental modification (e.g. development of a whole school approach to health promotion), or development of practical skills (e.g. to warm up and cool down before and after exercise), as well as parent training (e.g. to educate and encourage them to support their children in exercise participation), screening, and social support.

As well as directing interventions at young people aged 11 to 16, seven of the studies also involved children (aged up to 11 years), and four involved adults (over 21 years). Those studies involving all three age groups tended to be based on the concept of family approaches to health education, with parents being involved to reinforce school-based education in the home (e.g. Hopper *et al.,* 1992).

Nine of the twelve studies were classified as targeting 'young people in general', as opposed to young people who might be considered to be socially excluded (e.g. those from low income families, or ethnic minorities, or excluded from school). Black American young people were recruited into the evaluation by Baranowski *et al.* (described in two reports: Baranowski *et al*. (1990a) and Baranowski *et al*. (1990b) and hereafter referenced as Baranowski *et al*. (1990a)), and the evaluation by Bush *et al*. (described in two reports: Bush *et al*. (1989a) and Bush *et al*. (1989b), and hereafter referenced as Bush (1989a)).

Both recruited Black American young people, whilst the 'Dance for Health' study by Flores (1995), was purposely designed to appeal to African Americans and Hispanics living in California who, it was recognised, are at greater risk for cardiovascular disease. The other studies, although not in the main focusing on minority ethnic groups, were diverse in terms of the ethnic profile of their samples. The evaluation of the 'Know Your Body' programme in the Bronx district of New York (Walter I, 1989) comprised a sample of which around half were Black American, and nearly a quarter Hispanic. This is in contrast to evaluation of the same intervention in the Westchester county suburb of New York (Walter II, 1989) where nearly 80% of the young people were White. Nearly half the study population were Mexican American in the 'San Diego Family Health Project' (described in three reports: Madsen *et al*. (1993); Nader *et al*. (1986); Nader *et al*. (1989); and hereafter referenced as Nader *et al*. (1989)), whilst in the evaluation of the 'Wessex Healthy Schools Award' in the UK (described in two reports: Moon *et al.* (1999a) and Moon *et al*. (1999b), and hereafter referenced as Moon *et al*. (1999a)) up to 20% of the sample included were Asian. Reporting of the socio-economic status of participants varied, with some authors providing numbers and percentages of those in each socio economic group, whilst others provided descriptions of the general socio-economic status of the locality within which the research was conducted.

5.2 Development of physical activity promotion in outcome evaluations

Assessing need

Health promotion interventions can be developed in response to 'comparative' need (determined from examining services provided to one population and inferring need in another), 'expressed' need (determined by examining a

population's use of services), 'felt' need (identified by the population or others), and 'normative' need (determined by experts in the topic of interest). In some cases more than one type of needs assessment can be employed (e.g. combining evidence of what experts define as priority needs to address with what young people say they need).

The majority of the interventions included in this review were based on what the reviewers interpreted to be normative need (n=10). For example, in the study by Petchers *et al.* (1987) evidence was cited as to why it is important to educate young people about behaviours beneficial to cardiovascular health - to enable them to adopt and maintain such behaviours into the adulthood. Evidence was also provided about factors likely to act as mediators of health behaviour change - in this case social and family influences - which are thus worth considering in developing an intervention.

Only three studies based their intervention upon felt need. The Minnesota Heart Health Programme (described in seven reports: Kelder *et al.* (1993); Kelder *et al*. (1994); Kelder *et al*. (1995); Luepker *et al.* (1994); Perry *et al*. (1985); Perry *et al.* (1988); Perry *et al.* (1994); and hereafter referenced as Kelder *et al.* (1993)) and the 'Slice of Life' intervention Perry *et al*. (1987) were both developed following focus groups with young people. In the case of the latter the results indicated that the acceptability of exercise among young people was subject to peer influence, and the intervention was accordingly developed to be delivered by popular peer leaders. Baranowski *et al.* (1990a) conducted extensive interviews with members of the community and attended community advisory council meetings to ascertain the most appropriate content for their intervention, as well as its optimal location and time.

In one case the development of the intervention appeared to be based on analysis of comparative need (Vandongen *et al*., 1995), and another case there was no apparent needs assessment (Hopper *et al*., 1992).

People involved in development of the intervention

A variety of people were involved in the development of the interventions. Young people had an input in only four cases. The study by Perry *et al.* (1987) described peer leader involvement in the creation of a video which was used as an educational tool in a pilot study. In the study conducted by Flores (1995), selected participants chose their own music to dance to as part of a physical activity intervention. Evaluators also had an input into devising the programmes, as did health promotion practitioners. Nader *et al*. (1989) identified a registered dietician, an exercise physiologist, an educational technologist, and several psychologists involved in intervention development. Kelder *et al*. (1993) indicate involvement by community leaders, school superintendents, school administrators, faculty and parents. Perry *et al.* (1987) also specify various individuals not further described. One study was unclear in its description of those involved in the development of the intervention; and two studies did not describe this at all.

Piloting

Ten of the twelve included outcome evaluations had previously subjected the intervention to pilot testing. One study by Perry *et al.* (1987) subsequently led to the development and evaluation of the 'Minnesota Heart Health Programme' by Kelder *et al*. (1993). However, few details were provided about how the

interventions changed as a result of the piloting. Flores (1995) reported that the intervention was further developed to include dancing, as the pilot programme and the author's prior experiences of teaching young people showed that this was something the students preferred to regular physical exercise.

Theoretical basis of interventions

A range of theories were used in intervention development. The most commonly cited theory underpinning the development of the interventions was Social Learning Theory (Bandura *et al.*, 1963), cited in eight of the twelve included studies. The central tenet of Social Learning Theory is that people learn in social situations through observation of the actions of others, especially influential role models. Modelled behaviour is observed, imitated and can be reinforced through on going contact with the role model. Later revisions of the theory incorporated the concept of self efficacy (belief that one can perform a particular task, such as giving up smoking) as a factor in behaviour change (Bandura, 1977; 1990). The study by Petchers *et al.* (1987) combined elements of Social Learning Theory with concepts from affective education, the latter described by the authors as emphasising the use of the self in the learning process (p.452). The school and home based programme was taught by teachers, with the aim of helping young people develop their cognitive health knowledge and attitudes so as to reduce the risk of cardiovascular disease as adults. The materials used and activities undertaken were based upon affective education, which places emphasis on the individual in the learning process. For example, the 'Special You' module dealt with relationships between personal feelings and health. Concepts from Social Learning Theory included role playing, and peer discussions.

Other theories cited were the Health Belief Model, the PRECEDE model, the community orientated model and cognitive theory. Three studies did not cite the use of a theory to guide the development of the intervention (Flores 1995; Moon *et al.*, 1999a; Vandongen *et al.*, 1995).

Barriers to, and facilitators of, intervention development, delivery, and evaluation

Studies were examined for indications of factors which were favourable to, or which inhibited, the development and delivery of the intervention, and conduct of the evaluation. Eight studies reported what the reviewers interpreted to be barriers, whilst only three mentioned favourable factors.

Vandongen *et al.* (1995), in an evaluation of a school and home based fitness and nutrition intervention, discussed the problems associated with measuring sexual maturation. It was felt that limited privacy at survey sites, reluctance of children to be assessed, and difficulty of providing same sex personnel for measurement might deter the children from attending the follow-up data collection, thus potentially exacerbating attrition.

Baranowski *et al*. (1990a), in an evaluation of a 14 week family education and fitness programme, received complaints from families who wanted to attend the fitness centre with other families they were familiar with, but who had been randomised to the control group. Family attendance also dwindled due to factors cited by the authors as beyond their control (hurricane, bomb scares etc).

The study by Moon *et al*. (1999a) (discussed more fully in the next section) which evaluated the Wessex Healthy Schools Award Scheme, encountered a number of barriers to the adoption of the intervention, including the reluctance of some schools to become involved in the project, and the fact that teachers sometimes viewed evaluation with suspicion, perceiving it to be examining their performance. However, the Award Scheme Co-ordinators (designated teacher in each school) showed great support for the project and did what they could to promote it. Similar problems were experienced by Bush *et al.* (1989a), Walter I (1989), and Walter II (1989) in three separate evaluations of the 'Know Your Body' programme in Washington DC, the Bronx and Westchester County New York, respectively. Here it was reported that teachers lacked sufficient training and enthusiasm to teach the health education curriculum as it was intended, and there was a lack of time in the school curriculum to realise the full potential of the risk factor screening component as an educational tool.

5.3 Assessment of methodological quality of outcome evaluations

Table 19 shows the methodological quality of the studies, as judged by the reviewers.

Table 19: Number of studies meeting methodological quality criteria: All included outcome evaluations (N=12)

	N	%
Numbers assigned to treatment and control groups reported	10	83
Impact of intervention reported for all outcomes	**6**	**50**
Aims clearly stated	12	100
Random allocation	8	67
Equivalent study groups at baseline	**5**	**42**
Intervention and evaluation described enough to be replicable	8	67
Attrition rates reported for each study group	1	8
Pre-intervention data reported for all individuals/groups	**4**	**33**
Post intervention data reported for all individuals/groups	**7**	**58**

NB Criteria needed for an outcome evaluation to be judged methodologically 'sound' are in bold

Whilst all studies stated clearly their aims, only four met the criterion of providing pre-intervention data for all individuals/groups. The remaining studies either provided information only for those who completed the study (rather than all those originally allocated to study groups); and/or provided information for some individuals/groups only (e.g. only for the intervention

group); and/or provided information only for some outcomes only; and/or only provided data on changes between baseline and follow-up. Seven of the studies provided post-intervention data for all individuals/groups. The remaining five either provided information for some individuals/groups only; and/or for some outcomes only; and/or just reported change data. Only five studies provided evidence that study groups were comparable at the beginning of the evaluation (i.e. at baseline measurement). In three studies it was determined that groups were not comparable, and in four cases it was unclear as to their status. In terms of assignment to study groups, eight used random allocation procedures.

As noted earlier, there were four criteria for classifying a study as 'sound'. These are highlighted in **bold** in table 19. Four of the twelve studies were deemed methodologically sound (Moon *et al*., 1999a; Perry *et al.,* 1987; Walter I 1989; Walter II, 1989).

5.4 Which interventions are effective?

The evidence for the effectiveness of interventions to promote physical activity is limited to the three interventions evaluated in four studies which were judged to be methodologically sound. One study is from the UK, the other three from the USA.

There were differences in terms of scope and nature with all the interventions taking place in schools, but at varying levels. The 'Wessex Healthy Schools Award' (Moon *et al*.,1999a) sought to make health promoting changes throughout the school in terms of its ethos, organisational functioning and curriculum. In contrast the 'Know Your Body' programme (Walter I, 1989; Walter II, 1989) utilised classroom based educational activities reinforced by parental involvement and risk factor screening. The 'Slice of Life' initiative (Perry *et al*., 1987) was, in the main, a classroom-based intervention, focusing on encouraging changes in pupils' knowledge, attitudes and behaviour. However, a smaller component of the intervention did involve the young people being encouraged to identify wider environmental influences on their health, and to make recommendations to enhance the ability of the school to be more health promoting.

The differences between the interventions are further illustrated by examination of their content. The Wessex Healthy Schools Award, which took place over a 15 month period, involved structured frameworks to enable schools to achieve health-related targets. Key players included all members of the school community (teachers, support staff, pupils), as well as people from the wider community including support from local education authorities. Changes to the functioning of the school included implementation of a health education curriculum, as well as the setting of targets in key areas (including healthy food choices and physical activity). In contrast, the 'Know Your Body' programme focused more on curriculum activities to motivate participation in physical activity, healthy eating and prevent smoking, with pupils receiving around two hours a week of classroom based activities throughout the school year, over a period of five years. A risk factor examination component, in which measurements were taken on blood pressure and cholesterol levels, was included to provide pupils with an opportunity to gain awareness of their health status, in order facilitate personal goal setting and to reinforce behaviour change. The 'Slice of Life' intervention was similar to the 'Know

Your Body' programme, in that education and motivation for health behaviour change was provided in the classroom, however it also had a firm emphasis on socio-cultural influences on physical activity. Elected peer leaders, chosen by their classmates for their popularity, taught ten sessions covering information about the benefits of fitness, healthy diets, and issues concerning weight control. There were some attempts, however, to initiate change in school functioning. Pupils interviewed each other, and school staff to understand better how the school environment affects their health. Recommendations were then made to the school's administrators on how change could be effected. This was a pilot study which was subsequently modified and included as part of a larger, structural community-wide intervention.

In terms of the effectiveness of these studies the results were mixed. The Wessex Healthy Schools Award (Moon *et al.,* 1999a) was only judged effective for reported behaviour among older females, and was not effective as measured by audit scores. The 'Know Your Body' intervention as evaluated in the Bronx area of New York (Walter I, 1989) was successful in reducing blood cholesterol levels, and systolic blood pressure as well as increasing knowledge scores. Results of the evaluation of the intervention in the Westchester County suburb of New York (Walter II, 1989) were judged by the reviewers to be unclear. Evaluation of the 'Slice of Life' intervention (Perry *et al*., 1987) had less encouraging results, with no effect on the recorded uptake of physical activity, for either sex. Fuller descriptions of these studies and their results are provided below, and in tabulated form in appendices B and C.

Perry *et al*. (1987) evaluated a peer-led intervention aimed at establishing positive eating and physical activity patterns to prevent cardiovascular heart disease among pupils at a secondary high school in Minnesota, USA. The purpose of the study was to pilot the 'Slice of Life' intervention, a forerunner of the Minnesota Heart Health Programme. Specific aims were to decrease salt and saturated fat intake and increase intake of complex carbohydrates, and to increase levels of physical activity, particularly aerobic activities, in order to improve endurance and prevent injuries.

The intervention took place over 10 sessions, between autumn 1984 and winter 1985. Students were asked to select students they 'respected, admired and would like to be like' and those who received the most votes were asked to become the peer leaders, who then received three training sessions. The development of the intervention was informed by a needs assessment conducted with same age students, the results of which stressed the importance of peer influence in eating choices and attitudes towards exercise. Peer leaders also had a direct input into the content of the programme, having created videos to illustrate situations in which young people resist social pressures to engage in unhealthy behaviour.

The intervention covered knowledge about the benefits of fitness; characteristics of a heart healthy diet; social influences on eating and exercise habits; and issues to do with weight control. Environmental influences were explored through group projects in which pupils interviewed fellow students, teachers and school canteen personnel in order to identify and recognize how their environment impacts on their behaviour. For example, in small groups they observed the food available in the school canteen and compared it to healthy eating guidelines for nutritional content. Presentations were then made to the school administration with recommendations for change to improve the

school environment. A model of Social Learning Theory was cited as underpinning the intervention.

The study was undertaken in a suburban high school with 9th Grade (14-15 year old) students. Six classes were randomly assigned to receive the intervention (n= 173 students) and four classes to the control group (n=95) who received the regular health science curriculum. Attrition was not reported. Outcomes measured were reported behaviour (e.g. healthy eating, salt use, time spent on aerobic activity outside of gym class, choice of aerobic activity); intentions to exercise, knowledge of healthy eating and physical activity; and practical skills (e.g. ability to read food labels correctly to assess nutritional content). Outcomes were measured by a 16 page survey administered by teachers prior to the programme and once again following its conclusion. The questionnaire had been used in a previous study, and the results of reliability tests were reported.

In order to ascertain the acceptability of the intervention to the pupils, and whether the training the peer leaders had received was adequate, questionnaires were administered to the pupils and leaders alike during the course of the intervention.

There was no apparent effect for either males or females in increased participation in physical activity. Females in the intervention group tended to more favourable intentions to undertake physical activity than males, as well as increased knowledge. These differences were significant between the study groups.

In terms of acceptability, the females tended to enjoy the intervention more than the males. Having peer leaders deliver the programme was also well received. The peer leaders generally enjoyed their experiences and said they would recommend it to others. The majority of students reported the peer leaders to be adequately trained for their roles as educators, and felt that the election procedures for the leaders had been fair.

The authors discuss the greater impact of the intervention on females and point to the fact that the young women's higher participation in healthy behaviour at baseline may have motivated them to make further changes. They suggested that the fitness and nutrition messages may have had more salience for the young women, as they are related to issues concerning physical appearance and weight management. Recommendations for increasing the perceived relevance of the intervention to young men include emphasising the role nutrition can play in enhancing strength and endurance.

The fact that pupils were encouraged to identify environmental influences which affect their ability to engage in healthy behaviour, and to think of ways in which any barriers could be altered, is an encouraging feature of this intervention. Merely providing knowledge, and teaching skills to help the young people exercise more is likely to be counter productive if the environment in which they live prohibits them from doing so.

The reviewers judged this study to be replicable in terms of its evaluation design, the intervention content and its delivery. The thorough account of the process of recruitment and training of the peer leaders, and the results of the process evaluation, lend support to this initiative being reproduced in other settings. Indeed, the authors discuss how the procedures for the election of

the peer leaders, regarded to be fair and acceptable in the main, might be received differently in other cultures.

In terms of methodology, although no attrition was reported, it cannot be assumed that loss to follow-up did not occur (e.g. some students may have left the school and moved to another locality). Furthermore, the possibility of diffusion of the intervention into the control group via mixing of students between classes, was not discussed by the authors.

Moon *et al.* (1999a), in a UK-based controlled trial, evaluated the effectiveness of the Wessex Healthy Schools Award scheme on the knowledge, attitudes, behaviour and perceptions of secondary school pupils aged 11 to 16 years. The aim of the scheme, which was launched in 1992, is to enable schools to become more health promoting through a whole school or 'holistic' approach. There are nine key areas covered: the health education curriculum; links with the wider community; a smoke free school; healthy food choices; physical activity; responsibility for health; health promoting workplace; environment; and equal opportunities and access to health. Targets are associated with each area which the school must aim to achieve (e.g. healthier food choices in the school canteen). Participating schools must select and develop two areas, in addition to implementing the curriculum. Some support for health education resources may be provided by the Local Education Authority, and validation of the award is performed by OFSTED (Office for Standards in Education, UK).

Evaluation of the scheme in the Wessex area (covering Hampshire, the Isle of Wight and parts of Dorset, Sussex and Surrey) began in 1995 and lasted for approximately 15 months. The authors stated that random allocation to study groups was not possible due to the voluntary nature of participation in the Award Scheme, with schools not prepared to be randomised. Fifteen schools taking part in the scheme were invited to take part in the study, with 11 subsequently comprising the intervention group. One school dropped out due to changes in senior management following baseline. Problems were experienced recruiting control schools. Thirty five were contacted by letter followed by a phone call. The schools that declined to become involved cited a number of reasons for this including academic pressures, OFSTED inspections, lack of time and resources, and absence of financial incentives. The control group eventually included five schools, matched on area and socio-economic status. In terms of the socio-demographic details of the sample, the age of the pupils ranged from between 11 to 16 years, 4 to 49% received free school meals, and most of them were white, with 1-20% of Asian origin.

Outcomes measured included changes in pupils' attitudes, knowledge, perceptions and reported behaviour; and changes in school health promotion activity, organisation and functioning. Measurements were made at baseline during autumn 1995, and at follow-up in spring 1997. A questionnaire was used to assess changes in the pupils' knowledge, attitudes, perceptions and behaviour, and a structured audit schedule was devised to assess changes in school functioning, as well as observation schedules for assessing the school environment.

Process evaluation was also conducted to assess what was happening in the schools during the Award. Methods included semi-structured interviews with key staff (teachers, support workers) to assess perceptions of health

promotion; focus group interviews with pupils, and curriculum review. As with the outcome measurement, process evaluation was conducted both before and after the intervention. The measurement instruments used in both the outcome and process evaluation were either based on existing validated tools, or were specially devised for the study. Where new instruments were developed, they underwent pilot testing.

Results from the pupil questionnaires were presented for school years 7-8 (aged 11 to 13) and year 11 (aged 15 to 16), according to gender. Knowledge levels, which were high at baseline, changed little over the course of the intervention. There were mixed results for attitudes and reported behaviour. The intervention group performed better on current smoking behaviour, use of low risk drugs and attitudes towards using drugs. There was also a significant difference between the groups in terms of the number of younger males taking up smoking, with the control group performing worse. In terms of behaviour, older young women (aged 15 to 16 years) in the intervention schools performed better in almost all areas.

For the audit scores (reflecting health promotion activity, organisation, and functioning of participating schools), the intervention schools generally out-performed the control schools. The control group tended to be superior to the intervention group for the audit items 'physical activities' and 'taking responsibility for oneself'.

Results of the process evaluation provide an indication of how the scheme was implemented in the schools. The semi-structured interviews revealed strong support for health promotion in schools (98% stating this to be important). The main components of a healthy school as identified by respondents were clean environment, caring ethos, healthy eating, health awareness and good manners. Barriers to achieving a healthy school, expressed by those interviewed, included lack of time and resources. Facilitators included the commitment of the staff, support from management, staff concern for pupils' health, and pupils' own awareness of health.

In terms of training and support to teachers in Award schools, only 50% stated that they had received preparation for teaching health education at initial teacher training level. There were, however, opportunities for further training through school and locally based in service training, however this was not available to support staff. Whilst there was an increase in the percentage of key school staff who felt they were well informed about the Award scheme from baseline to follow-up, 11% stated at follow-up that they were not aware of the initiative.

A reflective account of the implementation and evaluation of the intervention by the authors revealed a number of problems encountered by the research team. These included problems with recruitment of schools, particularly control schools; misconceptions of the purpose of evaluation by some school personnel; objections to random selection of pupils for the questionnaire, leading to sampling of all pupils, which in turn increased research costs; and compromises to the confidentiality of pupil responses to the questionnaires. The authors used the findings of the process evaluation and their experiences in conducting the study to make a number of recommendations for good practice.

In general, this study provides a useful insight into the impact and processes associated with an intervention designed to engineer a whole school approach to health promotion. The results show some improvements in pupil outcomes (e.g. attitudes, reported behaviour) for the schools receiving the intervention in comparison to those which did not. Despite difficult circumstances in some schools, there was great commitment to the project and at the end a general feeling that it had made a positive impact. It is not clear, however, exactly what activities took place within each of the schools. A breakdown of the specific activities undertaken in each school for its selected areas would provide clearer guidance on how this intervention could be replicated.

A holistic approach to health promotion, undertaken in this intervention, requires all members of the school community - teachers, pupils, parents, support staff – all to play a role. The fact that the support staff did not have much in the way of support or training in health education mitigates against such a philosophy, as does the fact that even at the end of the programme there were still teachers who were not aware that it had just taken place in their school.

In terms of methodological quality, this study had matched groups at baseline and piloted the measurement instruments used. However, no baseline data were provided on the school which dropped out of the intervention. The reason given for the school's departure was changes in school management, and drop out occurred before the intervention began. It is therefore likely that the school did not leave because of resistance to the health education intervention.

The 'Know Your Body' programme **(Walter I, 1989; Walter II, 1989)** was a five year school-based intervention which aimed to promote nutrition, physical activity and prevent smoking amongst children aged 9 years old (at the start of the study) living in two districts in New York. Separate evaluations of the intervention took place in two demographically diverse areas of the city, the Bronx and Westchester County. The objective of the intervention was to reduce the young people's risk for developing coronary heart disease and cancer.

Beginning in 1980, whilst the students were in the fourth grade at elementary school, the intervention continued as they progressed to grade eight at junior high school. In terms of socio-demographic status the students in the Bronx sample (Walter I, 1989), a low income borough of the city, were mostly black or Hispanic, whilst in Westchester County, a middle to upper income suburb, white students predominated (Walter II, 1989). In both samples there were an equal number of males and females.

The intervention was originally developed in 1975 and underwent pilot testing in several studies. Based on elements of the PRECEDE health education planning model, it comprised teacher led classroom education, parental involvement activities, and risk factor examination. Throughout the school year the students received two hours a week of education on healthy eating (encouraging a diet of reduced fat, cholesterol, sodium, sugar), promotion of physical activity (endurance exercises to build skills and strength), and targeting of beliefs and attitudes around smoking. Parents were sent newsletters to inform them about the activities their children were participating in to advise them on how they might best support them in initiating and maintaining healthy behaviour. Other activities which involved the parents

included food surveys and family exercise days, as well as evening seminars. The third component involved a risk factor examination in which students' height, weight, skinfold thickness, blood pressure, post exercise pulse rate and cholesterol levels were measured and those results which did not require laboratory analysis were immediately fed back to them. Teachers then discussed the results with the pupils in the classroom in terms of setting behavioural goals before another screening, with the students keeping records in a 'health passport'.

The intervention was evaluated using a randomised controlled design. In both locations randomisation was to the intervention or to a control group which received only the risk factor screening component, with the results sent to students and parents by mail. In the Bronx all eligible schools agreed to participate, with 15 schools (1590 students) randomised to the programme, and 8 schools (693 students) participating as controls. In Westchester county, school districts were the unit of randomisation, with two districts receiving the programme (8 schools, 485 students), and two acting as controls (620 pupils in 7 schools). After five years of intervention 1036 (66.3%) of students in the Bronx evaluation qualified for data analysis, compared to 733 (80.5%) of those in Westchester county. It is reported that those lost to follow-up did not differ significantly in terms of risk factor and knowledge scores from those remaining. Dietary recall interviews performed by trained dieticians were conducted on a randomly selected sub-sample to assess nutritional intake, whilst clinical tests were performed as part of the risk factor examination component (height, weight, ponderosity, triceps skinfold thickness, blood pressure, pulse rates, cholesterol). Knowledge and attitudes were also measured, described by the authors as 'mediating variables', in a questionnaire administered in the classroom. Measurements were taken prior to the start of the programme at baseline, and then on a yearly basis. Evaluation of the processes associated with the intervention was also conducted. Trainers observed each of the teachers to determine their competence at implementing the curriculum.

Results are expressed in terms of net changes in outcomes, that is, the difference between study groups. A net change for the intervention group is the increase or decrease in an outcome minus that of the control group. After five years of intervention in the Bronx sample there was a 2.9% net decrease in plasma total cholesterol levels; a 2.1% net mean reduction in intake of saturated fat; a net reduction in systolic blood pressure, and net increase in diastolic blood pressure. The net mean increase in knowledge scores was 18.8% with no observed sex differences. The authors concluded that the intervention was effective at initiating decreases in dietary fat intake, but stated that the confidence intervals surrounding the estimates of effect contain zero (and thus are not statistically significant).

In the Westchester County evaluation, there were net decreases in plasma total cholesterol levels of around 5.1% (with sub-group analysis suggesting a greater reduction among young women); a net mean reduction in total fat intake of 3.6% and an increase in total carbohydrate consumption of 4.5%. There was no change in diastolic blood pressure and a net decrease in systolic blood pressure. There was a net mean increase of 22.6% of knowledge test scores, with greater net increases observed among young women.

Comparing the results of the two evaluations, the authors concluded that there was a greater trend towards decreases in blood cholesterol levels in the relatively more prosperous Westchester County population than in the Bronx. From this it can be argued that this type of intervention may be less effective amongst socially and economically disadvantaged young people, although no explanations are offered as to why. The authors discuss the possibility that the greater than anticipated decline in cholesterol levels in the control group in the Bronx may have disguised the intervention effect, although there is no speculation as to why such a change was observed in the control group. Further research into reduction of cardiovascular risk factors amongst socially excluded young people is recommended.

No data are reported on the results of the process evaluation. However, it was asserted that the ability of the teachers to teach the curriculum effectively varied widely. It was felt that their training was not of sufficient duration to motivate them to deliver the classroom component with enthusiasm and skill. This assertion was presented alongside a number of other points interpreted by the reviewers as indicating barriers to the development and delivery of the intervention. Difficulties were experienced with school administrators, who were reluctant to take time away from the standard curriculum and some of whom objected on philosophical grounds to the intervention being implemented in a school setting. It was also noted that the enthusiasm of parents and students waned as they progressed into junior high school. Furthermore, the risk factor examination, one of the staple features of the intervention, was considered to have created considerable disruption of regular school activities, and it was felt that its potential as an educational tool was not fully realised.

Both studies were judged by the reviewers to be methodologically sound although it was noted that the impact of the intervention on young people's attitudes was not reported. However, this was considered less of an issue since the authors described attitudes as being only one of the mediating factors for changes in coronary heart disease risk reduction, rather than a primary outcome measure in their own right. All other outcomes were reported on. It was also noted that, given the five year duration of the intervention, loss to follow-up rates in the two populations were relatively low. This is in contrast to the evaluation of the same intervention in Washington DC, where rates were much higher (Bush *et al*., 1989a).

The author's overall conclusion that the intervention was associated with favourable trends in blood levels of total cholesterol amongst the two populations was not shared by the reviewers. Whilst the evaluation design was considered to be sufficiently robust to enable the study to be judged sound, the unit of data analysis in the Westchester County evaluation was at the level of the school, whilst randomisation had been at the level of the school district (i.e. cluster randomisation). This may have exaggerated the intervention effect by unrealistically increasing the level of statistical power and therefore caution is advised when interpreting the results. The reviewers did not disagree, however, with the authors' conclusions on the effectiveness of the intervention in the Bronx.

6. IN-DEPTH REVIEW: YOUNG PEOPLE'S VIEWS

Outline of Chapter

The focus of this chapter is the non-intervention research from the UK included in the in-depth review: those studies which sought young people's own descriptions of what helps them and what stops them from being physically active. It describes:

- *the **characteristics** of the studies (e.g. the young people studied);*
- *the **methodological attributes** and **quality** of the studies; and*
- *a **synthesis of the findings** of these studies.*

Detailed structured summaries of each study follow the results. Appendices F and G contain more systematically ordered information.

For this chapter:

- ***practitioners, policy specialist** and **young people** or their **parents** are likely to derive most benefit from the findings of the young people's views studies outlined in sections 6.4 and 6.5; and*

- ***researchers** and **research commissioners** will find useful the description in sections 6.1 to 6.3 of the characteristics and methodological attributes of studies. The description of study methodology highlight the areas in which research seeking young people's views could be improved.*

Key Messages

- *A total of 16 studies were included. Most focused on physical activity in general. Two studies focused specifically on sports participation, one focused on exercise, one on PE in school, and one focused on active transport.*

- *The only consistently reported details of young people were age and sex. Most included young people from 11 to 16, although one study included young people up to the age of 23. Three studies focused on young women only.*

- *Only five studies indicated social class and two of these were with primarily working class samples. Only six studies indicated whether young people from ethnic minority groups were included.*

- *Methodological quality of the studies was variable. Whilst the majority of studies provided a clear description of the context of the study and clearly stated their aims, only three studies made any attempt to establish the reliability or validity of their data analysis.*

- *Young people attached different meanings to physical activity and the role it plays in their lives. Efforts to promote physical activity need to be framed within these meanings and be sensitive to how these might differ according to gender. More research is required to identify how needs may vary according to social class and ethnicity.*

- *Physical activity and fitness was predominantly equated with sport and exercise. Both were seen as requiring hard work, and sport was seen as competitive and requiring considerable skill.*

- *For most young women, physical activity was not a feature of their leisure time or interests. However, for most young men, physical activity fitted easily into their leisure time and they were more likely to see themselves as physically active and fit even if their activity levels were low. Young men held negative stereotypes about young women's abilities in sport.*

- *Identified barriers included: not feeling competent enough to take part; negative reactions from peers over skill and choice of activity; feelings of inertia and conflicting interests; self-consciousness about bodies; parental constraints, sometimes related to concerns about safety; lack of money, time and facilities; negative experiences of PE at school; and dislike of highly structured activities or those organised by adults. Many of these were particularly problematic for young women.*

- *Things which motivated young people to take part included creating opportunities for enjoyment and fun with friends; a chance to show off their skills; and stress relief. Many of these facilitators were identified by young people who were already physically active. Young women found support from friends to be helpful and were motivated to take part through weight control.*

- *Ideas for what could be done to promote their physical activity included: creating more cycle lanes, making activities more affordable; combining opportunities for physical activity with social activities; and providing less conflicting information on the type of physical activity needed for health benefits.*

- *Young women's ideas reflected a desire for more equal opportunities, with some demanding more opportunities to participate in 'non-traditional' activities, and others wanting more opportunities for taking part in 'young men activities'.*

As stated in chapter 3, 28 non-intervention studies sought young people's views on the barriers to, and facilitators of, physical activity. On closer inspection, five of these were excluded as they sought to infer descriptions of young people rather than seeking young people's own descriptions of what helps and what stops them being physically active (Balding, 1989; Biddle and Goudas*.,* 1996; Van Wersch *et al.,* 1992; Wersch.,1990; Whitehead *et al*., 1997). A further seven studies (found in nine reports) were excluded because they were undertaken before 1990 (Coe, 1984; Davidson,1982; Dickinson,1986; Humberstone, 1986; Scraton, 1986a; Scraton, 1986b; Sports Council, 1989; Sports Council,1991).

A total of 16 studies met the criteria for in-depth review. These represent just under 18% of the 90 studies identified by the mapping overall. Seven were found on commercial databases (Medline, CINAHL, ERIC, PSYCHINFO and SSCI), five by searching reference lists of reports as these came in, three on specialist databases and one was found through a personal contact. Publication dates ranged from 1991 to 2000. One report contained two separate studies, which are referred to here as Sports Council for Wales I (SCWI, 1994) and Sports Council for Wales II (SCWII, 1994). Three studies were each reported in two separate reports (Harris, 1993; 1994; Mitchell, 1996; 1997; and Mulvihill *et al*., 2000a; 2000b respectively, hereafter referred to as Harris, 1993; Mitchell, 1996; and Mulvihill *et al*., 2000). These studies were undertaken by a range of people for several different purposes. Many were undertaken by researchers who had been commissioned by external funding bodies (e.g. Local Education Authorities, the Sports Council). A minority were undertaken specifically by practitioners of for fulfilment of higher degrees. Studies were published in a variety of different formats. Studies were published in a variety of different formats. While most were published in academic journals, a minority were published in practitioner journals or as a book chapter. As the latter formats may be less likely to contain enough detail on the methods and results of studies, we made every attempt to trace a more detailed report from the authors in order to fairly assess its methodological quality.

One study surveyed young people from across England (Mason, 1995). Three studies were carried out in the North of England (Hopwood and Carrington, 1994; Kincey *et al*., 1993; Warburton, 1998); two in Southern English counties (Miller, 1993; Harris, 1993) and three in London only (Coakley and White 1992; Mitchell, 1996; Rogers *et al*., 1997). A further two studies were conducted in Avon (Balding *et al*.,1997; Orme, 1991); two in Wales (SCWI, 1994; SCWII, 1994); one in Devon (Gentle *et al*., 1994); one in the Midlands and the North and South of England (Mulvihill *et al*., 2000a) and one study provided no specific details on where it was carried out (one Local Education Authority area in the UK) (Birtwistle and Brodie, 1991).

These 16 studies went on to the detailed data extraction and quality assessment phase of the review. The rest of this chapter describes the health focus, context and sample characteristics of the studies, and their methodological attributes and quality. Finally, we present the substantive findings of the studies - what they reveal regarding young people's views of the barriers to, and facilitators of, their physical activity. The section ends with a detailed description of each study. (See appendices D and E for tables of details about the studies.)

6.1 Focus and context of studies

Although all of the studies focused on physical activity, there were some differences in emphasis between them. For example, two studies were focused specifically on sports participation (Coakley and White, 1992; Kincey *et al*., 1993), one was focused on exercise (Gentle *et al*., 1994); one was specifically focused on physical education within schools (Hopwood and Carrington, 1994); and one focused on physical activity specifically in the context of the journey from school to home (Balding *et al*., 1997). Most studies noted declining or low levels of physical activity, and some commented that this was especially marked amongst young women.

Three studies reported carrying out the research explicitly to inform the development of specific interventions to promote participation in physical activity (Harris, 1993; Mulvihill *et al*., 2000; Warburton,1998) and one study was carried out within the context of an evaluation of a mass media campaign to promote participation in sport (Coakley and White, 1992). Study authors offered a range of different rationales for why they considered it important to examine young people's views. For example, young people's views can provide information about the factors associated with participation in physical activity (e.g. attitudes, motivations) and thus provide an insight into how it might be promoted (e.g. Birtwistle and Brodie, 1991; Gentle *et al*., 1994; Kincey *et al*., 1993); and young people's views can help to develop an understanding of the meanings they attach to physical activity and the decision-making processes involved in participation in it (e.g. Coakley and White, 1992; Harris, 1993; Mitchell, 1996; Mulvihill *et al*., 2000a). Some studies offered no explicit rationale as to why it might be important to examine young people's views (e.g. Balding *et al*., 1997; Hopwood and Carrington, 1994; Orme, 1991). Interestingly, none of the study authors stated that it was important to examine young people's views because they are inherently valuable and young people have a right to be heard.

Characteristics of young people included in the studies

The only characteristics of the young people who took part in the studies which were consistently reported were age and sex. Details of the social class and ethnicity of the sample were less commonly reported. Table 20 gives details.

Just under a third (five) of the studies focused on samples of young people classified as 'older only'. These included four studies with young people aged 14 to 15 (Gentle *et al*., 1994; Kincey *et al*., 1993; Mitchell, 1996; Warburton, 1998) and one study with young people aged 14 years old only (Orme, 1991). Three studies focused exclusively on a younger age range (Birtwistle and Brodie, 1991; Harris, 1993; Rogers *et al*., 1997). Seven studies focused on a broad age range of young people: 11 to 15 years (Balding *et al*., 1997; Hopwood and Carrington, 1994; Mulvihill *et al.,* 2000a); 11 to 16 years (SCWI, 1994; SCWII, 1994); 6-15 years (Mason, 1995); and 13 to 23 years (Coakley and White, 1992). One study (Miller, 1993) merely states that its participants came from a comprehensive school. Two of the studies also surveyed adults for their views (Mason, 1995; Rogers *et al*., 1997). Nearly all the studies focused on young people of mixed sex, but three focused on females only (Miller, 1993; Mitchell, 1996; Orme, 1991).

Less than a third of the studies described the social class of the young people (Birtwistle and Brodie, 1991; Coakley and White, 1992; Mitchell, 1996; Mulvihill *et al*., 2000a); three of these indicated that they had included young people from different socio-economic backgrounds (Birtwistle and Brodie, 1991; Mulvihill *et al*., 2000a; Rogers *et al*., 1997) and two indicated that their samples were from primarily working class backgrounds (Coakley and White, 1992; Mitchell, 1996). Only six studies reported whether or not young people from minority ethnic communities had been included (Coakley and White, 1992; Hopwood and Carrington, 1994; Mitchell, 1996; Rogers *et al*., 1997; SCWI, 1994; SCWII, 1994). One of these studies (Rogers *et al*., 1997) specifically aimed to examine differences between ethnic groups. Across these six studies, between 0% and 59% of the young people included were

Table 20: Number and proportion of studies according to characteristics of the samples of young people used: Studies of young people's views (N=16).

	N	**%**
Age range*		
Younger only	3	19
Older only	5	31
All ages	7	44
Not stated	1	6
Sex		
Mixed sex	13	81
Male only	0	0
Female only	3	19
Social class		
Stated	5	31
Not stated	11	69
Ethnicity		
Stated	6	38
Not stated	10	63
Area of residence		
Stated	10	63
Not stated	6	38
Other information		
Stated	9	56
Not stated	7	44

*A study sample was classified as 'younger only' if the majority of young people in the sample were aged 14 or younger; 'older only' if the majority were aged over 14; and 'all ages' if the sample covered a wide age span (e.g. 11 to 15 years or 13 to 23 years).

from ethnic minorities. Nearly all the studies stated the area of residence of their samples: six studies had samples from urban areas only (Coakley and White, 1992; Hopwood and Carrington, 1994; Kincey *et al*., 1993; Mitchell, 1996; Rogers *et al*., 1997; Warburton, 1998); one from rural areas (Gentle *et al.,*1994); and three from both urban and rural areas (Birtwistle and Brodie, 1991; Harris, 1993; Mulvihill *et al.,* 2000a).

Most studies (n=12) used school samples and collected data from young people when they were in school (not shown in table). This suggests that the findings from these studies may not be applicable to young people who are excluded from school, who infrequently attend school, or have left school.

Nine studies presented a range of other information on the study population. This information included physical activity level (Coakley and White, 1992; Gentle *et al*., 1994; Miller, 1993; Mulvihill *et al*., 2000a; 2000b); size of school (Harris, 1993; SCWI, 1994) and academic ability (Birtwistle and Brodie*,* 1991; Hopwood and Carrington, 1994; Mitchell, 1996).

6.2 Methodological attributes of the studies

This section describes the methods reported in the 16 included studies. The details in which the methods were described varied considerably. Whilst most studies presented some detail about their sampling procedures, data collection tools, and methods of analysis, very few presented these systematically or in detail. The degree to which methods are reported is likely to reflect in part each report's publication status: whether it is a report for a primarily academic audience or a report for a wider audience that mainly aims to draw attention to the study having been done; and whether the report is published in a journal with restrictions on length or as a single document, with more space, for example, for appendices and illustrative tables or quotes. Of the 16 reports, four (Balding *et al.,* 1997; Miller, 1993; Orme, 1991; Warburton, 1998) appear to be secondary reports published primarily for health promotion or education practitioner audiences. Mitchell (1996) and Mulvihill *et al*. (2000a) are the only studies that appear to have been published jointly in journal and full report form.

Methods of sampling were not generally well described. All of the studies gave some indication of how they identified young people to sample: twelve (75%) used schools as their sole source (Balding *et al*., 1997; Birtwistle and Brodie, 1991; Gentle *et al*., 1994; Harris, 1993; Hopwood and Carrington, 1994; Kincey *et al*., 1993; Miller, 1993; Mitchell, 1996; Orme, 1991; Rogers *et al*., 1997; SCWI, 1994; Warburton, 1998) and four (25%) used schools combined with other sources (Coakley and White, 1992; Mason, 1995; Mulvihill *et al*., 2000a; SCWII, 1994). However, there was no detailed information on sampling frames. The methods used to select participants from these sampling frames were clearly described in only five (31%) of the studies. Schools were given (varied) instructions on selecting pupils (Mulvihill *et al*., 2000a), random selection procedures were used (Harris, 1993; Rogers *et al*., 1997), or all pupils within a given year group and present on a given day were included in the study sample or asked to participate (Birtwistle and Brodie, 1991; Gentle *et al*., 1994; Kincey *et al*., 1993; Mitchell, 1996).

With respect to the types of data collection used, six studies (38%) reported the use of self-completion questionnaires only (Balding *et al.,* 1997; Birtwistle and Brodie*,* 1991; Gentle *et al.,* 1994; Hopwood and Carrington, 1994; Kincey *et al*., 1993; SCWI, 1994). In the main these questionnaires were made up of closed questions with fixed response categories, although four studies included some open questions (Birtwistle and Brodie, 1991; Hopwood and Carrington, 1994; Kincey *et al*., 1993; SCWI, 1994). Interviews were mentioned in the other ten studies. Four involved individual interviews (Coakley and White, 1992; Mason, 1995; Rogers *et al*., 1997; SCWII, 1994); and six used focus groups (Harris, 1993; Miller, 1993; Mitchell, 1996; Mulvihill *et al*., 2000a; Orme, 1991; Warburton, 1998).

In three quarters of the studies (n=12) at least some detail about the questions that young people were asked was provided. Only seven studies gave explicit details of the questions asked (Birtwistle and Brodie, 1991; Harris, 1993; Hopwood and Carrington, 1994; Kincey *et al*., 1993; Mason, 1995; Mulvihill *et al*., 2000a; SCWI, 1994). In the remaining five, there was only an indication of the areas in which questions were asked (Balding *et al.,* 1997; Coakley and White, 1992; Gentle *et al.,* 1994; Mitchell, 1996), or, in one case (Miller, 1993), of the way in which they were asked. No details were presented in three studies (Orme, 1991; Warburton, 1998; SCWII, 1994).

Other details of data collection given in some studies were whether young people participating understood that their contributions would be either anonymous or treated in confidence (Hopwood and Carrington, 1994; Kincey *et al*., 1993; Mason, 1995; Mulvihill *et al*., 2000a; SCWI, 1994); whether strategies were implemented to put young people at ease (Coakley and White, 1992; Miller, 1993); whether the data collection instruments had been tested in similar circumstances before (Birtwistle and Brodie, 1991; Harris, 1993; Kincey *et al*., 1993; Mulvihill *et al*., 2000a; Rogers *et al*., 1997) and the setting in which data were collected (Birtwistle and Brodie*,* 1991; Gentle *et al.,* 1994; Harris, 1993; Hopwood and Carrington, 1994; Kincey *et al*., 1993; Miller, 1993; Mason, 1995; Mitchell, 1996; Mulvihill *et al*., 2000a; Rogers *et al*., 1997; SCWI, 1994; SCWII, 1994). Three studies gave no details for any of these aspects of their study (Balding *et al*., 1997; Orme, 1991; Warburton, 1998).

There were only three studies in which authors did not provide any detail on how data were analysed (Miller, 1993; Orme, 1991; Warburton, 1998). Details were provided in thirteen studies. For studies using self-completion questionnaires, data analysis usually involved descriptive statistics to examine proportions of young people responding in a particular way and inferential statistics to identify the strength of associations between different responses. For example, Birtwistle and Brodie, (1991) looked for relationships between attitudes and socio-economic status and gender; and Gentle *et al*. (1994) looked for differences in responses according to activity levels. In studies using interviews and reporting on data analysis, analysis involved identifying patterns in responses according to factors such as age, gender, ethnicity and social class (e.g. Coakley and White, 1992; Rogers *et al*., 1997). Mitchell (1996) and Mulvihill *et al.* (2000a) reported analysing their data thematically according to objectives or areas established before data collection. One study cited a research text book to support its use of content analysis and “the constant comparative method” (Harris, 1993). Other studies provided no detail other than stating that main themes or issues were identified (e.g. Mason, 1995, SCWII, 1994).

Two measures of young people's active participation in these studies are requests for consent and young people's involvement in a study's development or evaluation. From the authors' reporting, consent was explicitly requested from young people in only one of the studies (Rogers *et al*., 1997). In addition, Mulvihill *et al.* (2000a) state that their participants were informed of their right to withdraw from the study at any time. Young people appeared to have been involved in study development or evaluation in only two studies (Coakley and White, 1992; Mulvihill *et al.,* 2000a). Coakley and White (1992) stated that they took several steps to ensure that power relations between the young people and the researchers were minimised and Mulvihill *et al*. (2000a) involved two groups of young people in the development of their focus group schedules.

6.3 Methodological quality of the studies

As described in the methods section earlier, we applied seven quality assessment criteria to the studies of young people's views. Table 21 shows the number of studies meeting these quality criteria.

Table 21: Number of studies displaying the different methodological criteria: Studies of young people's views (N=16)

	N	**%**
Explicit account of theoretical framework and/or inclusion of a literature review	8	50
Aims and objectives clearly stated	15	94
A clear description of the context of the study	14	88
A clear description of the sample used and how the sample was recruited	6	38
A clear description of the methods used in the study including those used to collect data and those used for data analysis	10	63
Attempts made to establish the reliability and/or validity of the data analysis	3	19
Inclusion of sufficient original data to mediate between data and interpretation	9	56

Nearly all the studies provided a clear description of the context of the study and clearly stated their aims and objectives (88% and 94% respectively). The majority of studies presented a clear description of data collection and analysis methods (63%). Just over half included sufficient original data to mediate between data and interpretation (56%), and half demonstrated an explicit theoretical framework and/or literature review for the approach taken and/or methods used in the study. Fewer presented a clear description of the sample and how it was obtained (38%) and only three studies (1%) attempted to establish the reliability or validity of the data analysis. There was no difference between the quality of studies conducted in fulfilment of higher degrees to those which were externally commissioned and funded.

Only two studies met all seven quality criteria (Birtwistle and Brodie, 1991; Coakley and White, 1992). One study met six out of the seven criteria

(Mulvihill *et al.,* 2000a), six studies met five out of the seven (Harris, 1993; Hopwood and Carrington, 1994; Mitchell, 1996; Rogers *et al*., 1997; SCWI, 1994; SCWII, 1994); two studies met four (Gentle *et al*., 1994; Kincey *et al.,* 1993; Miller, 1993); three studies met two (Balding *et al*., 1997; Orme, 1991); one study met one (Mason, 1995); and one study did not meet any of the quality criteria (Warburton, 1998).

6.4 What did studies examining young people's views find?

In order to synthesise the results about young people's views on physical activity, each study's findings were considered in terms of their potential to answer questions relevant to the task of developing interventions for promoting participation in physical activity amongst young people. As a result of this exercise, studies were classified according to the main questions addressed by their findings. Results of this exercise are shown in table 22.

The majority of studies addressed the questions of what young people think about physical activity in general and what young people think stops them from taking part in physical activity (94% and 81% respectively). In contrast, only six (38%) studies looked at what young people think helps them to take part in physical activity. Only five studies asked for young people's own ideas for promoting physical activity.

Table 22: Number and proportion of studies according to questions addressed: Studies of young people's views (N=16)*

	N	**%**
What are young people's perceptions of and attitudes to physical activity? What does physical activity mean to young people?	15	94
What do young people think stops them from taking part in physical activity?	13	81
What do young people think helps them to take part in physical activity?	6	38
What ideas do young people have for what could or should be done to promote their participation in physical activity	5	31

*Study findings could address more than one question.

A cross-cutting finding was the importance of gender and young people's desire for autonomy, choice and respect. The specific findings are described fully under each individual question below.

What are young people's perceptions of and attitudes to physical activity? What does physical activity mean to young people?

All but one of the studies addressed one or both of these questions. The findings can be categorised into three broad areas: the perceived value and benefits of physical activity; sports preferences; and definitions of physical

activity and its role in the broader context of young people's everyday lives. Gender and current physical activity levels appear to be key factors in understanding how young people's views on physical activity might vary within each of these areas.

The vast majority of the young people saw physical activity as something that was important to do and had positive beliefs about its benefits. One study quantified young people's valuing of their compulsory PE curriculum (SCWI, 1994), reporting that 60% of their sample of Welsh 11 to 16 year-olds "liked it a lot", with a further 20% "liking it a little". Consistent across studies was the finding that the value of physical activity was seen in terms of increasing health and fitness (including mental health); developing new skills (Birtwistle and Brodie, 1991; Gentle *et al.,* 1994; Kincey *et al.,* 1993; Mitchell, 1996; Mulvihill *et al*., 2000a; Orme, 1991), and creating opportunities for socialising and enjoyment - although Gentle *et al*. (1994) found that those with low activity levels had less positive beliefs about the social value of physical activity and Rogers *et al*. 1997 found that reasons for exercising did not differ between Bangladeshi, Black African, Black Carribean and White 12 year olds in Camden, north London. In three studies, young women particularly valued the role of physical activity in maintaining weight and a toned figure (Gentle *et al*., 1994; Mitchell, 1996; Orme, 1991).

Preferred sports included badminton, tennis, swimming, football and basketball, with young women expressing a preference for cycling and aerobics and a dislike for 'traditional sports' in PE at school (Kincey *et al.,* 1993; Mitchell, 1996; Orme, 1991). The Sports Council for Wales' questionnaire-based survey (SCWI, 1994) consistently found young women respondents describing an unmet need for more access to football and rugby. The same study reported that "games" were preferred to other forms of PE by half of pupils, although a substantial proportion of pupils (15%) instead preferred PE to games. Other studies also reported varying views on preferences for competitive exercise, with young women and young men with low activity levels expressing a dislike for this kind of physical activity (Gentle *et al*., 1994; Mulvihill *et al*., 2000a).

Whereas young men reported physical activity to fit comfortably within their leisure time both within and outside of school (Coakley and White, 1992; Mulvihill *et al*., 2000a), in many studies physical activity did not feature as part of young women's leisure time. The young women preferred to spend time with friends perhaps talking or shopping (Coakley and White, 1992; Mitchell, 1996; Mulvihill *et al*., 2000a; Orme, 1991). This difference is explored in-depth by Coakley and White (1992) who found it may be accounted for by the pathways available to men and women as their identity develops and they negotiate their transition to adulthood. For example, young women's descriptions of what it meant to 'become a woman' did not include physical activity, but rather, other activities through which 'femininity' could be confirmed/reaffirmed. For young men, participation confirmed their masculinity. This relates to Mitchell's (1996) finding that young women did not see physical activity as fitting into the 'girly' content of their magazines.

Physical activities were also seen as 'babyish' by the young women in Coakley and White's study, and therefore taking part in them was seen as taking a step back in their development. In addition, young women had a very narrow definition of 'sport' (as competitive with winners and losers, organised, and requiring commitment) and therefore did not identify as 'sports people' even if

they were very physically active. Similarly, Miller's interviews with young women who played sport or danced (Miller, 1993) found that this group readily identified sporting role models, but that none of these role models were female. The opposite was found for young men, who readily identified as 'sportspeople' even if their participation in sport was minimal. This links to the finding of Gentle *et al.* (1994) that young men perceive themselves to be 'fit' or 'very fit even if their activity levels are very low.

Two further studies (Hopwood and Carrington, 1994; SCWII, 1994) found gender stereotyping of physical activity to be common among young people. The first of these found negative stereotyping related to exercise and young people to be more common among young men. The young people in the second of these studies held egalitarian views in relation to themselves or their peers, but reverted to stereotypes when talking of adult sporting activity: for example seeing keep fit and aerobics as particularly suited to adult women due to their need to maintain their body shape and their family commitments.

Other themes in findings relating to young people's perceptions of physical activity include the relative nature of sporting ability, the relationship between sport and fitness and views on the work necessary for successful participation. Harris (1993) found that young people tended to assess themselves by comparing themselves with their peers, using terms such as "average", "normal", and "better than others". The same study, describes a "performance orientation" towards fitness and exercise, describing how young people reported believing that to be fit you have to be good at sport and, similarly, fit people were necessarily good at sport. Sport was seen by the young people in the Sports Council for Wales' study (SCWII, 1994) as meaning organised, rule governed and competitive activity. 'Real' sporting activity could be compared with 'recreational sport for leisure' [p5], with the former underpinned to a greater degree by a kind of 'work ethic': for example, sporting heroes and young people's own successes were put down to dedication, practice and determination, rather than innate talent. Similarly, the young people interviewed by Harris (1993) stressed that exercise involved hard work and being worn out.

These findings emphasise that any efforts to promote physical activity amongst young people need to be framed within the differing meanings young people attach to physical activity and the role it plays in their lives. This is likely to involve a delicate balance between challenging dominant notions of 'femininity' and 'masculinity' whilst emphasising the kinds of physical activities young women are interested in. Shifting the emphasis from 'sport' to highlighting the wide variation of physical activities and degree of performance which could be classified as valuable is also needed.

What do young people think stops them from taking part in physical activity ?

Twelve studies addressed this question. The findings of these can be classified into four main areas according to who or what young people referred to when they identified barriers to their physical activity: the self; other people; practical and material resources/circumstances; and the school.

In terms of 'the self' and 'other people', feeling incompetent or not good enough to take part in physical activity was a barrier identified by the young people in two studies (Coakley and White, 1992; Kincey *et al.,* 1993). Young

people in Harris's (1993) study felt that a lack of knowledge about potential benefits might stop young people from exercising. Some of the young people in Coakley and White's (1992) study argued that a lack of skills would mean that physical activity would not be enjoyable. Closely linked to this were fears of looking stupid in front of others, and getting negative feedback from peers, especially amongst young men. This could include not only negative feedback following a supposedly poor performance but also negative feedback about a particular choice of activity (Mason, 1995). Young women active in sport or dance cited specific problems with a lack of support from other young women and the prejudiced attitudes of young men (Miller, 1993).

In two studies, feelings of inertia and lack of motivation amongst young women were common (Mitchell, 1996; Mulvihill *et al*., 2000a). In Mitchell's (1996) sample, these feelings were said to be related to conflicting interests such that energy went in to doing other (non-physical) activities which the young women enjoyed more or to characterisations of themselves as 'lazy' and preferring to watch television. Also for young women, self-consciousness about their bodies and concerns about their personal appearance were factors in non-participation; they felt they would not be able to project the image they wanted (Mulvihill *et al*., 2000a; Orme, 1991; SCWII, 1994). This was especially problematic for mixed sex activities (Mulvihill *et al*., 2000a). Parental constraint was also identified in young people's views on barriers (Balding *et al.,* 1997; Coakley and White, 1992). These were related to safety issues and more general constraints on young people's leisure time, especially for young women. One in five of the young Bangladeshi women interviewed by Rogers described family disapproval as a reason for not exercising. However a similar proportion of Bangladeshi young men in this study described parental concerns over bullying as restricting their activity levels. Young Muslim women interviewed by Miller (1993) reported cultural restrictions on dancing. Young women also reported being constrained in their participation in physical activity by their boyfriends. For example, young women explained that they would make decisions about what to do in their leisure time on the basis of what their boyfriends wanted to do and on occasions this had led to their not participating in physical activity (Coakley and White, 1992).

Consistent across a number of studies was a lack of practical and material resources needed for taking part or sustaining involvement in physical activity. These involved lack of time; a lack of facilities for storing bicycles; lack of money and lack of transport (Balding *et al.,* 1997; Coakley and White, 1992; Kincey *et al*., 1993; Mulvihill *et al*., 2000a). A lack of choice of activities was also considered to be problematic: young women did not want to participate in any physical activities which they associated with childhood or primary school, or saw as being highly structured or organised by adults.

Although physical education is generally considered to be an important part of the curriculum (Birtwistle and Brodie, 1991; Hopwood and Carrington, 1994), many young people in these studies held negative perceptions of physical education at school. Many of the other identified barriers also related to school settings. Participation in school PE was found to be particularly problematic for young women (Coakley and White, 1992; Mulvihill *et al*., 2000a; Orme, 1991; Warburton, 1998). Although it was felt that there was a lack of choice of activities on offer (with 'traditional' activities being seen as boring) and a lack of consultation in what activities they would like to do, many of the barriers identified by young women were to do with PE facilities and rules such as inadequate changing and showering facilities, a lack of time for changing, and

unacceptable gym kits such as short skirts. These relate to young women's concerns about their bodies and personal appearance identified earlier. Young women also identified negative and insensitive behaviour from school PE teachers (Miller, 1993; Mulvihill *et al*., 2000a; Coakley and White, 1992). Problems with favouritism, lack of interest, scolding or criticism by PE teachers were reported more generally by both genders in two studies (Mason, 1995; SCWII, 1994). The first of these studies also identified young people's frustration with PE games that have complex rules or with having to play before learning rules.

What do young people think helps them to take part in physical activity ?

Six studies addressed this question (Coakley and White, 1992; Kincey *et al*., 1993; Mason, 1995; Miller, 1993; Mulvihill *et al*., 2000a; SCWII, 1994). Many of the facilitators seemed to be identified by young people who were already physically active. Young people identified a range of things to do with the self which helped or motivated them to take part in physical activity. These were a chance to show off their skills; enjoyment; and a way of relieving stress. Mulvihill *et al*. (2000a) identified different facilitators according to whether young people were active (social benefits; competitiveness; sense of achievement and feelings of confidence) or inactive (enjoyment; well-being; avoiding boredom; and help with losing weight for females). In terms of other people, parental support was important in terms of creating opportunities for physical activity, encouragement and financial support, and social support from friends was important for young women, especially in terms of trying out a new activity. For example, young women active in sport described the importance of positively seeking out "sporty friends" (Miller, 1993). In terms of influences specifically related to school, liking and respecting PE teachers was described as helpful to participation (Mason, 1995).

What ideas do young people have for what could or should be done to promote their participation in physical activity

Five studies addressed ways of facilitating participation in physical activity (Balding *et al*., 1997; Harris, 1993; Mitchell, 1996; Mulvihill *et al*., 2000a; Orme, 1991). The majority of the young people's suggestions were about increasing practical and material resources such as: creating more cycle lanes; making activities more affordable; increasing access to clubs for dancing; and provisory single sex physical activities in youth clubs alongside or followed by mixed sex (non-physical) activities (combining sports and leisure facilities). They suggested emphasising the fun and social aspects of physical activity and felt that there was enough literature on the availability of opportunities for physical activity. Young women were not adverse to reading articles on physical activity in 'teenage' magazines as long as the articles were about 'real-life' readers engaging in sport rather than offering specific exercise instructions. 11 to 14 year old participants in Harris' (1993) study of beliefs about health, fitness and exercise suggested that there should be a greater consensus about desirable health behaviour in general. These young people were described by the study author as having a limited understanding of the benefits of exercise: they thought it necessary to run fast, for example, to burn off fat and believed that too much exercise could wear out the body, indicating that conflicting advice might be confusing young people unnecessarily.

Many young women wanted more 'non-traditional' activities to choose from which would be acceptable to them and fit in with their lifestyle. Some

expressed dissatisfaction with physical activities which were seen as only being acceptable to 'sporty' people (Warburton, 1998). Others wanted to be able to take part in 'young men activities' and some were fed-up with young men monopolising facilities for physical activity (Mulvihill *et al*., 2000a). These issues suggest that traditional gender stereotypes around sports may be beginning to break down, at least on the part of young women. This is borne out by the findings of a self-completion questionnaire survey by Hopwood and Carrington (1994) which showed young women as beginning to challenge gender stereotypes and expressing confidence in their sporting abilities. However, this survey also found that young men were less likely to challenge such stereotypes and, indeed, Mulvihill *et al*. (2000a) found that young men were uninterested in taking part in mixed sex physical activities because of perceptions of low standards amongst young women. Thus it seems that young women's demands have as much to do with demanding equality as they do with getting opportunities to participate in physical activity.

6.5 Detailed descriptions of studies examining young people's views

This section of the chapter describes each of the sixteen studies in detail. The studies are described in alphabetical order for ease of identification. An 'at-a-glance' summary of each individual study's methods and findings can be found in appendices D and E.

In what appears to be a secondary report, **Balding *et al*. (1997)** outline the findings of the 'Travelwise Survey', carried out by the Schools Health Education Unit, which aimed to examine the travel patterns and travel aspirations of young people on the home to school journey. The study was funded by Devon County Council Road Safety Unit, to determine feasible ways of reducing the number of cars taking young people to school. Fifteen secondary schools surveyed young people in the summer of 1997.

Although no details are presented on how young people were recruited into the study, 3447 males and females aged between 11 and 15 years took part. These young people filled in a questionnaire consisting of 38 questions that provided 120 pieces of information about the journey from home to school. Although no clear examples are given of the questions asked, some idea can be gleaned from the report. The questions asked seemed to have covered the following areas: current methods of travel to school; how young people would like to travel to school; feelings of safety/ vulnerability; and involvement in accidents. No detail is given about how the data were analysed, but authors state that interest was concentrated on a number of groups (e.g. the 20% of pupils who want to travel by car but do not; the 33% of pupils that are afraid to go to school because of bullying).

Many of the findings reported by the authors relate to the prevalence of use of different types of transport taken to and from school. The two main findings from young people's views highlighted are that 13% of young people who do not currently cycle to school would like to (23% of 11 to 12 year old young men) and 39% of car travellers would prefer to travel by some other means (including 25% who would prefer to walk or cycle). The study's authors also claimed that those who do not travel by car, but want to, are less likely to feel safe travelling to school and are less likely to consider themselves fit; those

who walk but would prefer to travel by some other means tend to feel less safe; and more young women than young men would prefer to walk given the choice.

Other views highlighted by the reviewers (but not highlighted by the authors) are that 3% of the sample said they never feel safe when travelling to school; 52% said they are in favour of creating more cycle lanes; 5% reported that they would like to walk but are not allowed to; and some young people are reported to have said that they are not cycling because there is nowhere at school for them to leave their bicycle.

Reviewers judged this study to have met only two of the seven quality criteria: clearly stated aims and an adequate description of context. Particularly problematic is the lack of sufficient data presented to substantiate the relationships highlighted by the authors between safety, bullying, perceptions of health and fitness and mode of transport. However, it must be noted that this appears to be a secondary report, perhaps specifically written for a 'practice' rather than academic research audience. A fuller report of the findings of the Travelwise survey does exist, but at the time of writing we are still waiting to receive it.

In terms of young people's views on the barriers to, and facilitators of, participation in physical activity, the reviewers noted three issues. Firstly, only a few of the findings presented by the authors are strictly about young people's views on physical activity; the study's main focus is on travel to school. Secondly, we have to rely on what the authors report young people to have said as data on this are not presented directly. Thirdly, most of the views presented do not seem to be a result of asking young people directly what they think promotes or prevents their participation in physical activity. This is further compounded by the lack of reporting on the study's data collection tools. The only findings interpretable with any degree of confidence as barriers are the 5% who say they would like to walk but are not allowed to (with the barrier being parental constraint) and some young people are not cycling, as there is nowhere at school for them to leave their bicycle (with the barrier being lack of school facilities). The finding that 52% of pupils said they are in favour of creating more cycle lanes could be interpreted as something young people say should be done to facilitate their physical activity. Thus, in the study barriers and facilitators seem to be about practical resources and constraints arising from a young person's family context.

The aim of the survey by **Birtwistle and Brodie (1991)** was to examine the factors that might influence children's attitudes towards physical activity. The project was part of a larger research initiative undertaken to examine the teaching of health-related fitness in a Local Education Authority and included a primary school-aged sample as well as a secondary school-aged one. Six secondary schools were used to identify young people; these schools were selected as being those which would yield samples with sufficient individual variation in each of the variables under investigation. Information on how the schools and the pupils were recruited into the study is not presented. Data were collected using a questionnaire comprising the Children's Attitude Towards Physical Activity (CAPTA) scale, with questions on socio-economic status. Pupils' perceptions of physical education were based on indicators used in previous investigations. The questionnaire contained both open and closed ended questions, and was administered in the classroom by teachers.

It is not stated whether confidentiality or anonymity were assured or whether consent was provided.

The final sample comprised 291 secondary school pupils (13 to 14 year olds) and 316 primary school pupils (10 to 11 year olds) consisting of 293 males and 314 females. The main findings of the study highlighted by the authors were that: the majority of young people perceived achieving health and fitness as the most important objective for PE; young people ranked PE highly in relation to other areas of the curriculum (with secondary school pupils ranking it as slightly less important than primary school pupils); young women held more positive attitudes towards physical activity than young men; and attitudes to physical activity varied according to literacy level, with those in higher literacy sets having more favourable attitudes. Authors speculate that these findings suggest that the importance attached to PE in the national curriculum may influence young people's perceptions and the way in which PE is scheduled and taught within the school is of crucial importance.

Additional detail noted by the reviewers included information about the perceived importance of different objectives of PE derived from the open-ended and closed questions. For the open-ended questions, objectives of PE were seen as (in ranked order, most important first): fitness; sport (e.g. to build skills in sports); enjoyment (PE seen as fun);'other' (friends/ social interaction/ character building/ fairness/ honesty); and recreation (e.g. having a break from other lessons). The most important objectives derived from the closed questions were: to become fit; to learn why exercise is beneficial; to learn about sports; to become good at sports. No differences in the ranking of these objectives were found according to gender or socio-economic status.

The reviewers judged this study to have met all seven of the methodological quality criteria. It was, however, noted that more information could have been provided about the context of the study, particularly about the larger investigation the survey was part of, and who funded the research. It is not clear whether assurances of confidentiality or anonymity were made, and, given that the students were asked to rank their favourite school subjects, and that teachers administered the questionnaire, the validity of the responses might be regarded as questionable.

The study did not examine young people's views on the barriers to, and facilitators of, their participation in physical activity; rather, it addressed attitudes and perceptions to physical education in school. The implications these attitudes and perceptions have for how schools schedule and teach PE are not clearly drawn out by the authors, other than the fact that PE teachers need to be more aware of trends in attitudes.

Commissioned by the Greater London and South East Regional Sports Council, **Coakley and White (1992),** conducted interviews with young people to explore how they make decisions about participating or not participating in sport. The study was conducted as part of a larger evaluation of a mass media campaign to attract more young people into sport (the 'Ever Thought of Sport' campaign). The authors note that the research and the way they conducted it was grounded in an "interactionist approach". From this perspective, sports participation is a result of shifting decisions made within the context of people's social worlds.

The authors intended to recruit a sample representing both active and inactive young people. Half of the interviewees were chosen because they were actively involved in sports programmes and half through teachers or programme organizers identifying them as non-participants or "drop-outs" from physical activities. A total of 60 young people were interviewed from an industrial area of South East London. The sample was aged between 13 to 23 with only three participants older than 18; 75% came from working class families; 26 were female and 34 were male; 85% were described as 'native Britons' and 15% as from other ethnic background).

Individual interviews were conducted by the authors of the report, lasted 45 minutes to one hour, and were tape recorded. The authors outline several strategies which aimed to ensure that the young people felt comfortable and answered honestly. These included: trying to make the interviews as conversation-like as possible; avoiding 'why' questions in favour of a focus on what, when and how things happened; and trying to avoid intimidating or challenging young people and their decisions. The usual order and type of questions asked included: sports background and leisure activities; what happened when they made decisions to become involved in certain activities, the dynamics of staying involved and how they perceived their involvement patterns in the future; relationships between specific leisure activities and friends, family members, school, and work. Interview data were analysed by identifying patterns in responses and taking into account factors such as age, gender, social class, ethnicity and relationships with others. Two researchers analysed the data, although it is not clear exactly how this was done.

There were five key themes reflected in young people's accounts of how they came to participate or not in sports: the transition to adulthood; desires to display personal competence and autonomy; constraints related to money, parents and opposite sex friends; support and encouragement from significant others; and past experiences in school sports and physical education classes. The authors also noted that gender was a key factor within these themes such that, for example, the operation of constraints on participation differed according to young men's and young women's accounts.

The reviewers noted the following detail within these themes. Participation in sport occurred only when it supported the transition to adulthood. For example, young people over 15 years chose leisure activities which gave them the opportunity to do adult things and for some this meant not participating in organized sports programmes which were seen as treating young people as children. This seemed to be particularly the case for young women who would not participate in sports associated with childhood or done at primary school; or those which were highly structured and organized by adults. Participating in these was seen as taking a step back in the young women's development. Descriptions of 'becoming a women' did not involve sports, but included activities and relationships through which femininity could be affirmed. For young men, however, sport seemed to support their transition to manhood, through, a strong association between sports and masculinity. Related to this were issues of identity and definitions of 'sport'. Whereas men identified themselves as a 'sportspeople' even if their participation in sports was minimal, women did not identify as such, even if they were very active.

In terms of concerns about personal competence and autonomy, participation was much more likely if it gave a chance to display or extend personal competence, and less likely if it would lead to 'being shown up' or negative

peer evaluation. Continued participation in sport was less likely if a skills peak had been reached which could only be transcended with increased time and effort. Constraints on participation related to money including not participating/ finding it difficult to sustain participation because of the cost of activity, equipment and/or transport. Constraints related to parents included parental constraints on young women's leisure time because of safety or wanting young women to contribute to household chores meant that they could not participate in things like after school sports clubs. Constraints on participation related to relationships included boyfriends determining what women did with their time. Support and encouragement of significant others was expressed in terms of parental support for 13 to 16 year olds (e.g. highlighting participation opportunities, transport), support from other adult role models for those aged over 16 (e.g. teachers) or support from friends, especially for young women (e.g. young women joining sports clubs together).

Past experiences of PE at school were mostly negative for young women. These particularly related to the rules and arrangements surrounding PE rather than the physical activities themselves, and included dislike of the gym kit ("horrible short skirts" and changing/showering facilities). However, young women did express some positive views such as having a chance to participate in 'non-traditional' and mixed sex activities at school like ice-skating, badminton and basketball. For the young men, current interest and participation in sports was said to have been grounded in positive experiences of PE at school.

The reviewers judged this study to have met all seven quality criteria. Particular strengths relative to other studies are the inclusion of a clear rationale (building on previous research/theoretical frameworks) and clear reporting of study methods.

In terms of young people's views on the barriers to, and facilitators of, their participation in physical activity, the reviewers noted the following about this study: it focuses on 'sport' rather than physical activity; it is sometimes difficult to tell when identified influences on sports participation/ non-participation are directly described by young people themselves and, although the study findings do identify barriers and facilitators and perceptions of physical activity, the study does not address what young people themselves think could or should be done to promote their participation in physical activity. The barriers and facilitators identified in this study seem to reflect the interplay between young people's identity development and their physical and social environments, particularly in terms of school structure and culture and wider gender relations.

In order to work out ways of encouraging young people to participate in physical activity, especially those with lower activity levels, **Gentle *et al*. (1994)**, conducted a survey to investigate factors associated with the motivations to exercise of active and inactive young people. As part of a larger study into the development of adult risk factors for coronary heart disease, a questionnaire was completed by 382 secondary school pupils (14 to 15 year olds) in the Devon market towns of Crediton and Okehampton. The exercise levels of these young people were determined by the amount of "vigorous exercise undertaken" both in school and out of school and the sample was divided into 'low', 'medium low', 'medium high' and 'high' exercise level groups in roughly equal proportions.

The questionnaire elicited responses (yes/no or measured on a 5 point Likert scale) to questions in eight areas: perceptions of level of exercise and fitness (e.g. how physically active are you?; would you like to be fitter?); beliefs about exercise (e.g. keeps me healthy; is sociable;); importance of reasons for exercising (e.g. being fit; enjoying it); enjoyment of competitive exercise; encouragement received to exercise (e.g. from family, friends, school); opportunities for exercise; smoking and drinking; and involvement in encouraging others to exercise. Questionnaires were completed in a school setting but no details are reported about how this was conducted (e.g. who administered questionnaires, how the research was presented, issues of consent).

The main themes to emerge from the study (as reported by the authors) were presented in terms of response patterns common to all the young people in the sample and those which differed according to sex and exercise level. The majority of young people reported positive beliefs for their health about the value of exercise (e.g. most wanted to be fitter, felt that exercise impacted positively on their health), and in general the most encouragement for exercise was received from school. However, beliefs about the personal and social benefits of exercise were less positive for those with low levels of exercise.

Young women of all activity levels and low exercising young men reported that they did not like taking part in exercise which was competitive. Low exercisers reported receiving less encouragement to exercise (in particular from out of school sports clubs for young women of all levels and low exercising young men); and less than half the low exercisers thought they had good opportunities for exercise.

Overall the authors concluded that the study showed that young people are likely to be receptive to initiatives to increase their participation in physical activity but that such initiatives need to take account of motivational differences according to gender and activity level. In this respect one further finding was highlighted as important by the reviewers: that, regardless of exercise level, young men tended to cite wanting to be strong as an important reason for exercise, whilst young women tended to cite losing weight.

The reviewers judged this study to have met four of the seven quality criteria. No explicit theoretical framework and/or literature review was outlined to justify why the study was carried out the way it was; few details were given on sampling and recruitment procedures and the authors did not report any attempts to establish the reliability/and or validity of the data analysis. Particular problems for the interpretation of the study findings in these respects were the difficulty in judging who may have been excluded from the survey and the characteristics of those who took part; the possibility of 'data dredging'; and errors in looking for statistical associations amongst a large number of variables. However, the aims, context and methods of the study were clearly reported and the authors included sufficient data to illustrate their findings.

The reviewers noted several issues in relation to young people's views on the barriers to, and facilitators of, their participation in physical activity. Firstly, this study only directly asked young people for their attitudes and beliefs about physical activity; it did not ask young people what could or should be done to promote their participation in physical activity. Secondly, the beliefs of young people were presented somewhat out of context: the study did not explore why

young people held these beliefs or whether the beliefs might change across time or situations. Finally, although the use of pre-defined statements and numbers allowed us to pinpoint the commonalities and differences within young people's views and make generalisable inferences, the study does not elicit young people's views in their own words, and it therefore masks the range of meanings young people might attach to physical activity in the context of their everyday lives.

In a focus group study of young people between 11 and 14, **Harris (1993)** explored attitudes towards health, fitness and exercise. The study took place in 1991 in two English state secondary schools which drew pupils from urban and rural areas. Sixty one pupils (31 young women and 30 young men) took part in 14 focus groups involving between three and six pupils. Participants were selected at random from pupils in year 7 and year 9. Some focus groups were mixed sex and some single sex. The groups took place in school, during the school day and lasted between 40 and 50 minutes. They were led by the author using a series of prompts to ask about pupils' perceptions of fitness and health and about links between health, fitness and exercise. Examples of the questions asked during the focus groups included 'what do you think a fit person looks like and how do they feel?' and 'what comes into your mind when you think of the work "health"?' The author does not state whether participants were assured of confidentiality or whether consent was obtained. Groups were tape recorded, the tapes transcribed and a qualitative analysis carried out. This was based around a content analysis which is described as 'identifying core variables' which recurred frequently in the data'. The author's thinking processes were also documented throughout the analysis [p.6]. While it is not stated explicitly, it is possible that the study's analytical framework was determined to some extent early on in the study, since the topics covered in the prompt sheets used to direct group discussions are similar to the areas covered by the study's findings.

A number of themes arising from the data were presented by the author which help to illustrate the ways in which young people's perceptions of exercise, health and fitness were interlinked and how their views were not always based upon detailed knowledge. Young people's perceptions of barriers to their participation in exercise are not explicitly represented. In terms of facilitators, young people are described stating that a greater consensus over desirable health behaviours would be helpful. Health was perceived by almost all the participants as being physical rather than psychological and as being about negatives – not being fat, not smoking, not drinking too much, not being inactive. The idea that unseen aspects of the body's functioning could be important was not emphasized and slimness was associated with both fitness and health. In spite of an awareness that exercise was healthy, the participants could not explain why this should be the case. There was a lack of concordance between the young people's beliefs about a healthy lifestyle and their concerns about their own behaviour which they often reported as being relatively sedentary. The young people saw fitness as being about sports ability, such as being able to run fast. Fit people were seen as slim and as less likely to smoke and drink. Being unfit was about being fat, eating too much, or the wrong food, and sitting around too much. Pupils thought that they were relatively fit and could always think of someone less fit than they were. Fitness was also associated with boring and exhausting bouts of exercise. Reasons for exercising were mainly social and the participants thought that young people who did not exercise had more attractive things to do like

watching television or going out with friends. Bad experiences of exercise were also mentioned – feeling inadequate or getting exhausted.

The reviewers judged that this study fulfilled five out of seven quality criteria. Information on those participating in the study was limited to a description of their age and sex. There were no details of the likely or actual socio-economic background of participants or discussion of who may have been excluded by the study's sampling and recruitment methods. Use of more direct quotations from the focus groups would have helped the reviewers to judge whether the author had moved appropriately from the data to the reported findings. On the other hand the study is useful in allowing young people's concepts of health to be explored and in putting exercise in a social context. The link between fitness and slimness in the young people's views was interesting.

As part of higher degree dissertation, **Hopwood and Carrington (1994)** carried out a survey to investigate young men' and young women' attitudes to physical education. They wanted to investigate claims that young women' attitudes to PE might be becoming more positive, and to look at young women' perceptions of their own femininity in relation to sport participation. For this study, 280 young people, ranging in educational ability and with an equal numbers of young men and young women, were drawn from two 'all white' urban high schools in the North of England. The young people in the sample, aged 11, 13 and 15, in relatively equal numbers, completed a questionnaire containing both closed and open-ended questions. Questionnaires were administered during lesson time. The young people were told that the study was to find out what they liked and disliked about PE and how they thought provision in this area might be improved. Personal and institutional anonymity was assured, although there is no description of consent having been requested of potential participants.

The questionnaire also sought to explore possible influences on sport participation, including the role of teachers, the family and peers. The report focused on answers given in response to questions about four factors: competition and team sports; the status of PE; self-esteem; and gender stereotyping. For each of these factors the questionnaire contained a set of statements with 5 point Likert scales. The young people were also asked, a) whether they would like to be remembered at school for being either a brilliant student, the most popular, a sports star or a leader in activities; b) if they had an extra hour at school, whether they would take a course of their own choice, do sports, do some other activity, or study; and c) to examine a list of individual physical activities and indicate which they thought were for young men only, which for young women only and which for young men and young women equally. It is not clear whether any of the items used in the questionnaire had been used in previous studies. All responses were presented and analysed according to differences in sex.

The main findings highlighted by the authors were that young women did feel confident in their abilities in PE, and that they tended to question gender stereotyped statements when these were presented. Interestingly, the young males' responses to these statements were found to be significantly different; they tended to be unsure about these statements, rather than disagreeing with them. Other findings included a significantly lower valuing of competition and winning among young women, with team and individual sports being favoured equally by both sexes. No difference was seen between the sexes in the perceived importance of PE as an activity in and after school, although young

women indicated less of an interest than young men in being remembered at school for being a sports star, and more in being remembered as popular. When presented with the list of different physical activities, most were described as being for young men and young women equally. The exceptions to this were rugby and netball which were seen by more than half of both young men and women as not being for young men and young women equally and cricket, football and basketball which young men also felt were not gender neutral.

The study was judged by the reviewers to meet five out the seven quality criteria. It was limited in its description of how its sample of young people was selected and by there being no attempts to establish the reliability and/or validity of data analysis. A lack of information and discussion about the survey's sample - the extent to which a group of young people selected as being of interest to the authors actually provided generalisable data - raises questions as to the wider applicability of the author's findings. It is unclear as to whether young people were involved in any way in helping develop the items in the study's questionnaire data collection tools.

The reviewers noted that the study only addressed differences between the sexes in young people's views about gender stereotyping and perceptions of PE ability. The questionnaire items described did not appear to ask young people directly about what they liked or disliked about PE, or for their own suggestions about how PE could be improved, despite this being described to the young people surveyed as being the main interest of the study.

The exploration of the inter-relationships between self-esteem, motivations, and barriers to sports and exercise participation was the purpose of the survey reported in **Kincey *et al*.** (1993). This study was jointly funded by Manchester Education Committee, North Western Regional Health Authority, and the Sports Council (North West Region). It began following the establishment of a three year Sports Co-ordinator post in 1991. The purpose of the post was to encourage the participation of young people in a range of sports and activities, particularly to encourage them to continue participating after leaving school. It was felt that Self-esteem was a key factor in determining what motivates or prohibits young people from engaging with sport and exercise, hence the need to look at the inter-relationships between Self-esteem and factors encouraging or prohibiting participation.

A non-random sampling procedure was used to derive a 'representative' sample of young people. Schools, judged to reflect the range of ethnic and cultural groups in each area, were recruited from each of the three health authority districts in Manchester. Recruitment of schools was undertaken by the Sports Co-ordinator who had professional contacts with teachers who agreed to take part in the survey. Year 10 pupils (n=485) aged 14-15 years (mixed sex) from six schools comprised the final sample, with a response rate of 81%. A questionnaire was used to collect the data. It was devised by the research team, and included elements from other established instruments (e.g. the Coopersmith Self-esteem Scale, see Coopersmith 1967). Questions covered: motivators and barriers to physical activity; self-esteem; reasons for participation and non-participation; and sports preferences. The instrument was administered in the classroom by the teacher, who made assurances of anonymity. Whether the pupils offered consent to take part is not clear.

The main findings of the study highlighted by the authors were that: practical as well as psychological barriers to participation were identified by young people; most young people acknowledged social, physical and stress-reducing benefits of exercise; and high levels of self-esteem were associated with identifying fewer barriers to participation.

In connection with these main findings, the reviewer noted the following details. When presented with a number of statements to which pupils were asked to agree or disagree, the majority (73%) agreed that keeping fit was important to them, and that exercise increased confidence and helped them to feel good (69%). Most popular sports enjoyed included badminton, tennis, swimming, football, and basketball. Not having enough time was the most commonly cited barrier (31%) followed by not feeling confident enough (23%), not feeling good enough (22%) and not being able to afford it (18%). Analysis of responses to open ended questions about reasons for participation/non-participation for a subset of 89 participants further illustrated perceived barriers. These included lack of time or energy (26%), lack of motivation (23%) and lack of confidence (18%). In terms of pre-specified motivating factors, the results showed that social aspects of exercise are important, with 87% agreeing that they like being part of a team, 85% finding exercise fun, 55% agreeing that exercise helps them make friends, and only 14% disliking team sports. Stress-relieving motivators were also important, with 80% agreeing that being active helps them to forget their troubles, 70% feeling really good after exercise, and 69% finding participation increases their confidence. Only 23% agreed that they used exercise to relieve stress. Motivators included intrinsic enjoyment (62%), health and fitness (25%), and a cluster of psychological factors such as confidence, relationships and relaxation, all scoring around 4%.

The reviewers judged this study to have met four out of the seven methodological quality criteria. No explicit theoretical framework and/or literature review was outlined to justify why the study was carried out the way it was. Details on the sample and how it was recruited were lacking, particularly with respect to cultural and socio-economic details. The lack of information about how the schools were recruited has implications for the replicability of the study. However, the aims, methods of data collection, and context of the study were all adequately reported, and sufficient original data were presented to mediate between data and interpretation.

With respect to young people's views on barriers and facilitators, this study asked young people directly about what stops them and what motivates them to participate in physical activity. The barriers and facilitators mentioned by the young people could be broadly classed as being to do with the self (e.g. having the confidence to participate) and practical resources (e.g. having the time and money to play sport). In the main, however, the emphasis in this study was on the self in terms of psychological factors, in particular self-esteem. This is reflected in the implications for practice and further research presented by the authors. These concentrate on addressing mental health issues, rather than material, structural and social circumstances (e.g. changing the school timetable/homework schedule so that pupils have more time to undertake exercise).

As part of its programme of work to promote greater participation in sport by young people and to complement a national survey of sports participation rates, the Sports Council commissioned the Social Survey Division of the UK's

Office of Population Censuses and Surveys (OPCS) to conduct in-depth interviews across England with 23 young men and women aged 11 to 16 (**Mason, 1995**). The study aimed to explore young people's views on participation in more detail and, in particular, to investigate the "school effect" and other factors which affect participation. Interviews were also carried out with children and PE teachers but this summary focuses, where possible, on interviews and findings reported for the 11 to 16 age-group. The study is contained in a 71 page report published by the OPCS. The report focuses almost entirely on presenting its methods and presenting interviewee quotes. It contains no executive summary, no description of previous research or theory, no conclusions or discussion.

The study's sampling procedure is described but unclear. It appears that young people were identified via school areas, schools having been selected using local authority Census data so as to achieve some form of control over the regional and socio-economic mix of sample. Interviewers then used specified types of area near schools ("e.g. urban council estates, middle class suburban area") and quotas for age, sex and "keenness on sport" to select households and young people. We are told that recruitment and interviews were conducted by experienced members of the OPCS field staff and that they were asked to avoid a pattern of non response from those less interested in the topic of the survey. However, we are left knowing little about the final sample of interviewees: we are not told how interest in sport was determined among potential interviewees, for example, nor about the final sample's socio-economic characteristics.

The study's interviews were conducted in young people's homes, following consent from parents and confidentiality was assured. Interview guides are presented as appendices to the report and cover areas such as favourite sports/PE done in and out of school lessons, which sports interviewees would like to do or do more of, awareness of and opinions about local facilities, the benefits of doing sports, the influence of sports watched or sports heroes, the influence of peers and past experiences and feelings about sport. There is no mention of development or testing of the interview guide. The report describes using interview transcripts to identify "main themes and issues". Further detail of data analysis, for example, whether the study started with an analytical framework or whether one arose during analysis, are missing.

The study's findings for children aged 6-11 and young people aged 11 to 16 are reported together in two lengthy chapters entitled, 'the views of children: factors which affect their sports participation' and 'the views of children: what they liked and disliked about sports. Each chapter is divided under different headings: the first chapter, for example, starts with "physique, physical abilities and health" and "early upbringing and family encouragement when very young". Each heading is followed by a selection of quotes related to the heading, The quotes are sometimes preceded by one or two sentence summaries of the author's views on what had been said during interviews. No attempt has been made by the report's author to identify any outstanding or unexpected themes or patterns for the study as a whole. As a result the findings can only begin to illustrate the breadth and range of young people's views on sport and discussion of the report's findings can only be tentative. At times the author uses terms, such as "generally" or "often", that appear to indicate a frequent finding. Issues that are identified in this way and that also appear to be barriers identified by the study's interviewees include frustration with complex rules for some school games, playing outside during bad

weather, negative reactions from peers over performance or in a choice of physical activity and criticism from PE teachers. Similarly, facilitators might include encouragement from peers and having respect for PE teachers.

Disappointingly, as an England-wide study that appears to have aimed to ask young people directly about barriers and facilitators to their sports participation and to involve young people with a range of commitment to physical activity, the reporting of this study meant that it met only one of the seven quality criteria: description of the study's aims. Furthermore, since even teenagers' views on physical activity are known to vary with age, the author's amalgamation of responses from young people aged 6 to 16 further reduces the influence that this report should have on any recommendations for research or practice for the 11 to 16 age group.

Undertaken for a Masters thesis in Physical Education, **Miller (1993)** presents some of the results of group interviews undertaken with young women active in either sports of dance, to explore their perceptions of femininity. Arising from her observations as a PE teacher, Miller speculated that these young women may experience conflicts between perceptions of femininity and their commitment to an active lifestyle and that these conflicts may be more problematic for sports as opposed to dance students.

Two comprehensive schools in a town in Sussex were used to identify young women. Three hundred and forty-six young women filled in a questionnaire and those who were classified as being active in sport and dance were selected to take part. No details on recruitment processes are given, but eleven group interviews were conducted, with four to six participants in each group. No socio-demographic details are presented, but from the results presented some young women from minority ethnic groups. Interviews lasted up to 65 minutes and were tape recorded with the permission of the participants. Although all groups were asked the same questions in language which was 'user-friendly', the author does not present details of these. However, the author does note that the style of questioning aimed to be supportive and to encourage openness and that the young women actively participated in the discussions. Results are presented under two main headings: 'activity role models and self image' and 'femininity: physical appearance'.

The main themes within young people's views to emerge from the study (as reported by the authors in the study's summary and discussion/ conclusions) are presented in terms of the ways in which active young womens' identities often have to be compromised to fit in with conventional notions of femininity. Derived from the young women's discussions, the author found the following factors to be implicated in this: the lack of available female role models for young women interested in sport; lack of support for their interest from female friends; prejudiced attitudes of young men; inability of teachers to cope adequately; and conventional notions of the female physique (i.e. toned up muscles but no too bulging). Further findings from the study (but not emphasised by the author in their summary/conclusions) highlighted how young women were supported by the family to continue their participation in sports or dancing, although Muslim women reported being restricted in their dancing as it was not seen as acceptable by their family.

The reviewers judged this study to have met only two of the seven quality criteria: clearly stated aims and an adequate description of context.

Particularly problematic was the lack of detail on the ages of the young women interviewed and the lack of detail on the kinds of questions the young women were asked. With respect to the latter it was difficult to tell to what extent the young women had been asked directly to reflect on how notions of femininity helped or hindered them in pursuing an active lifestyle.

Mitchell (1997) conducted focus groups with young women to examine their attitudes to physical activity. The study, undertaken for a higher degree, had a focus on exploring a potential role for 'teenage magazines' in promoting physical activity amongst young women. The author speculated that using this type of mass media is likely to increase the appropriateness and success of promotional strategies as they engage with adolescent sub-cultures. The study integrates findings from a content analysis of 'teenage magazines' to establish coverage of articles on physical activity and interviews with magazine editors and representatives from the HEA and the Sports Council (England) with the data from the focus groups with young people.

In order to identify young women to take part in the study, the author wrote to five schools in one area of South East London. The first school that agreed to take part was chosen. This school was located in a relatively deprived and ethnically mixed area (41% pupils white; 24% black; and 35% from other minority ethic groups), and the academic record of the school was below average (19% achieved GCSE grades A to C). All year 10 young women (aged 14 to 15 years) were asked to take part during a school assembly; most agreed. Four focus groups were held with a sub-sample (n=21) of the young women. These ranged in size from three to seven and were made up of naturally occurring friendship groups. The questions asked in the focus groups covered: the role played by magazines; the young women's attitudes to articles on physical activity and other types of articles; frequency of participation in sport or exercise; factors affecting participation and attitudes towards different types of physical activity.

In addition to noting a low participation rate amongst the young women in organized sports, the main themes to emerge from the study were presented in terms of barriers to participation in physical activity. Identified barriers were: conflicting interests with a preference for socializing, watching television and shopping; lack of motivation and internalised feminine values. This latter barrier was not directly identified by the young women themselves but was derived by the way they talked about magazine features on physical activity and sports people. Magazines were considered to provide a focal point for friendships, and the young women were not averse to increased coverage of physical activity.

The author recommends that using magazines to promote physical activity amongst young women is a feasible and acceptable strategy. Beyond the challenge of maintaining ongoing communication with magazine editors to include articles about physical activity (the content analysis found that less than 1% of articles were about this topic) and the costs involved in using commercial advertising techniques, the young women provided ideas on what types of articles they would like to see. In line with their preferences for 'real-life' stories and the problem pages, young women said they would prefer articles about readers engaging in sport rather than instructions for specific exercises. Further findings from the study were young women's expressed preferences for cycling, swimming and aerobics and feeling fit and

toned/getting a better figure; maintaining health, acquiring new skills and building confidence as the perceived benefits of exercise.

The reviewers judged this study to have met four of the seven quality criteria. No explicit theoretical framework and/or literature review was outlined; the author did not report any attempts to establish the reliability/and or validity of the data analysis; and there was insufficient original data included to mediate between data and interpretation. Particular problems for the interpretation of the study findings in these respects were the lack of a defined body of research to help make sense of the study findings, the extent to which the main findings presented might have been determined by the author's selective interpretation; and the inclusion of findings which were not illustrated by supporting data. However, the aims, context, sample and methods of the study were clearly reported.

The reviewers noted that this study directly asked young people for their views on the factors that influence their participation in physical activity; it also asks how magazines could be used to promote young people's participation in physical activity. The reviewers felt that the study did not explore in enough depth the young women's expressed barriers to participation. For example, reasons for expressed lack of motivation could have been analysed in relation to the practical resources for exercise available to them.

A study by **Mulvihill *et al*. (2000a; 2000b)** aimed to investigate the reported perceptions of, motivations for, and barriers to, physical activity among young people. The study was funded by the Health Education Authority (HEA), to inform planning for the HEA's 'Active for Life' programme. Specific objectives were to explore what is seen as constituting physical activity and beliefs relating to it; preferred activities; relationships between physical activity and other health behaviours; the role of friends; gender differences in perception and participation; the role of parents and the school in facilitating or hindering physical activity; barriers and motivations; ways of overcoming barriers; and ideas for promoting greater involvement.

The study sample had a bias towards young people in lower socio-economic groups, those with lower levels of physical activity and young women aged 13-15. The authors identified young people by selecting six sites that covered a range of urban and rural settings in the North, Midlands and South of the UK and choosing schools and other centres within each site. Young people do not appear to have been asked for their consent before participating, although they were assured of their right to withdraw from the study at any time. The full study presents findings for a children aged 5-11, and parents of both age groups. Our interest is in the authors' methods and findings for young people aged 11 to 15.

A total of 96 young people aged 11 to 15 were interviewed in ten focus groups in school settings and in four focus groups and a number of ad-hoc interviews held in shopping centres and youth clubs. Confidentiality was assured. A focus group topic guide was piloted with two groups of secondary school students. The guide, which is presented in full in Mulvihill *et al*. (2000a), specified topics related to the study's main objectives. The authors aimed to allow participants to exert an influence over the choice of issues discussed. Interviews were recorded and key points transcribed. Data were analysed thematically.

The authors highlighted the following findings: a high level of awareness about the benefits of physical activity; a perception that the social aspects of physical activity were important and that group activities take away some of the focus on effort and increase enjoyment; that parents do not play much of a role in encouraging participation. There were differences between the accounts according to sex: while young men described enjoying being active in school breaks, young women were more likely to prefer to chat with friends; unlike young men, young women had very strong and negative opinions of PE teachers, saying they lacked sensitivity and did not take them seriously; the young women sometimes felt embarrassed or intimidated around their male peers when active, whereas young men were more likely to state that they were uninterested in mixed-sex activities because young women were considered to display a poorer standard of physical fitness.

The authors describe the following as inhibiting factors identified by young people: feeling embarrassed and self-conscious about the body; awareness of their image amongst their peers (both felt by young women in particular); a general feeling of inertia, especially among older young women; a preference for other non-physical activities; and a lack of time due to the demands of homework; too much expense and trouble to organise (including cost of public transport); absence of late buses for those in rural areas; a lack of consultation and choice over school PE. The following are presented as motivating factors and for inactive young people: feelings of well-being, enjoyment and avoiding boredom and help with losing weight (the latter especially for young women). Active young people appeared to be motivated by: enjoyment and fun, social benefits and making friends, the presence of competitiveness and being part of a team, increased confidence and a sense of achievement. Two main suggestions from the young people for supporting their own physical activity were highlighted: making activities more affordable and their having more input in choosing enjoyable activities at school.

This study was considered to meet six out of seven of the review's methodological quality criteria. The authors described many aspects of their methods in some detail, and presented a full literature review. Like all but two of the other young people's views studies in this review, the authors did not report any attempts to validate or check on the reliability of their data analysis.

Since the authors framed much of their study in terms of factors that motivate and inhibit young people's physical activity (in terms of, not only young people's own attitudes and preferences, but also the behaviour of other people and the physical environment), many of their findings are directly relevant to this review's conceptualisation of barriers and facilitators. Young people were also asked directly what they thought could be done to help them improve their physical activity levels.

Orme (1991) describes the results of a study using semi-structured interviews to identify the influences and constraints on participation in physical activity amongst 14 year old young women. The study was initiated in response to evidence of a marked decline in physical activity levels amongst young people, especially amongst young women. Ten young women were identified through two secondary schools in Avon (no details are presented on how these young women were recruited).

The author presented the results are presented under five main headings: 'boring', 'fitness and image'; 'not welcome'; 'suffering'. Under 'boring', it is

reported that less active young women found the traditional sports offered at school boring, all would welcome more choice and some would like more involvement in young men activities. For 'fitness and image' the young women were said to see physical activity as valuable in terms of body shape and weight rather than fitness per se. They were also reported to have talked about an increasing self-consciousness about their bodies, face and hairstyles and taking pride in their personal appearance which was incompatible with physical activity. Under 'not welcome' the author highlights that physical activity did not feature in any of the young women's descriptions of what they do in their leisure time. For 'suffering' it is reported that many did not like the rules and arrangements related to the PE environment (showers, PE kit) and that those who did not like physical activity felt that the benefits of taking part did not outweigh the negative aspects of taking part (seen as inconvenience, discomfort, or feelings of failure/ embarrassment).

On the basis of the findings of this study, the author put forward an 'exercise map'. This categorises young women along two dimensions: pro- or anti - exercise and pro- or anti-participation. It is argued that those who are pro-exercise and anti-participation (may enjoy sport but do not make or take opportunities to do it) could be encouraged to participate by combining sport and leisure facilities.

The reviewers judged this study to meet only two of the seven quality criteria: clearly stated aims and an adequate description of context. The almost complete lack of detail on study methods makes it difficult to assess the reliability or validity of the study findings. The reporting of data collection methods, for example, is such that it is impossible to know from this report whether young people have actually been asked directly about what gets in the way of or what helps them participate in physical activity. The absence of the young women's voices in terms of illustrative quotes to substantiate the author's interpretations is particularly problematic. However, it must be noted that this appears to be a secondary report, perhaps specifically written for a 'practice' rather than academic research audience. Attempts have been made to find out whether a fuller report exists, but at the time of writing we are still waiting for a response to our enquiries.

The objective of the study by **Rogers *et al.* (1997)** was to describe the factors contributing to variations in health-related behaviours among a sample of 12 year old young people living in London. The study was conducted following evidence suggesting increased participation by young people in behaviours deleterious to health (smoking, inappropriate use of alcohol, misuse of drugs, unprotected sexual activity). Whilst previous research on young people's health has taken ethnicity into account, this study aimed to examine differences in health behaviour between and within ethnic groups. The research was conducted by researchers working at University College London, and Kings College London, and funded by the Locally Organised Research Scheme, North East Thames Health Authority and the DoH.

All of the state secondary and grant maintained schools in the London boroughs of Camden and Islington were approached to take part in the study. A representative sample was not sought. Rather, the authors cite a separate survey being carried out at the time of writing of over 1000 year 10 students. A sampling frame was used to identify eligible pupils and a stratified random sample was drawn to represent young people from four main ethnic groups (Bangladeshi, Black African, Black Caribbean, White). Three hundred and

seventy three young people were selected, with 158 agreeing to be interviewed. Of the four ethnic groups, White and Black Caribbean young people were most likely to consent to take part, and participation varied according to schools. The sample comprised roughly equal proportions of the four groups, with slightly fewer young people from the Black Caribbean group represented. The socio-economic profile of the sample is not explicitly stated, however the authors mention that they were successful in contacting a substantial minority of Bangladeshi and Black African low income families. A sample of 118 parents also consented to taking part, with 98 subsequently being interviewed. Interpreters and translators were employed where needed. Questions were asked on a range of issues including diet, exercise and use of tobacco and alcohol.

In terms of patterns of physical activity, young women were significantly less likely to exercise outside school than young men. Those who did exercise did so less frequently than young men. Bangladeshi young women and young men were least likely to take exercise outside school. The reasons given for exercising were broadly similar between the sexes and the different ethnic groups. Equal numbers of young men and young women said they exercised outside school because they felt it was good for their health. However, more young women than young men exercised outside school to alter or maintain their body shape whereas twice as many young men as young women reported exercising outside school because they 'just like to'.

The young people indicated factors influencing their participation in physical activity. One of the reasons given for not taking regular exercise was not having the time or opportunity to do so, although the precise reasons for lack of opportunities were not specified. Other reasons for lack of participation included the influence of culture and concerns over safety. Around 20% of Bangladeshi young men reported that their parents disliked them going out after school due to concerns about bullying, and the presence of rough people near their homes. For Bangladeshi young women, the issues were more aligned to gender, femininity and cultural beliefs, with 20% citing family disapproval, immodesty of sports clothes, and the communal nature of sporting activities as reasons for not exercising. The parents of Bangladeshi children expressed similar concerns over racism, racial violence and bullying, and reported applying restrictions for their children, especially their sons, in some cases confining them to their homes. The low levels of reported physical activity by young people in this cultural group is considered by the authors to be less a reflection of their disinterest or lack of awareness of its benefits, and more related to lack of opportunity.

Culture also influenced how young people spend their spare time. Ninety percent of the Bangladeshi young people reported spending their free time at home, with 24% reported helping at home. This is in contrast to 60% of White young people reported spending free time at home, and none reported helping at home (no data presented on the other cultural groups). Factors which young people thought might enable them to take more exercise were not specified.

This study met five out of the seven methodological criteria as judged by the reviewers. The merits of the study were its explicit statement of aims, description of context, sampling and recruitment methods, data analysis, and provision of sufficient data to mediate between data and interpretation. However, it was considered that more literature could have been cited in the introductory section of the report to provide a stronger context and rationale for

the study. Whilst the fact that young people are increasingly engaging in risk behaviours is mentioned and the key health areas of concern are cited, issues relating to risk behaviour in each area are not identified and discussed. For example, there are no references to research and theory on the issues pertaining specifically to diet, exercise, tobacco and alcohol, and how ethnicity relates to each of these. It was also noted that little information was provided on any attempts to enhance the validity of the data analysis. For example, it is not known whether procedures to analyse data from open ended questions such as such as use of two researchers to independently categorise and code data, for example, were used.

The Sports Council for Wales commissioned two related studies as part of a series that aimed to obtain information on the involvement of secondary school children in Wales in curricular, extracurricular and community-based sport. A representative sample survey and a study based around in-depth interviews were carried out in 1993/4. These followed two similar studies conducted to establish baseline data in 1991/2. The 1993/4 survey and interview-based studies are both described in the same report, a 45 page document published by the Council (**Sports Council for Wales, 1994**) and are referred to here as **SCW I** and **SCWII** respectively. Reports of the earlier studies were unavailable in time for this review.

The report as a whole is framed in terms of the importance of laying the foundations for participation, improved performance and excellence in sport from an early age, and in the importance of sport, not only for health and fitness, but also for young people's socialisation. It cites literature indicating declining rates of participation, especially for young women and refers to research that indicates that young people's decisions regarding sports are influenced by a wide range of factors, not solely the provision of "hard" information, for example about the benefits of exercise [p11].

The first of the 1993/4 studies (**SCWI**) aimed to investigate the issues of "availability of opportunities, access to facilities, attitudes towards sport and influences on decisions to participate". It is based upon questionnaire responses made by 2,873 young people aged 11 to 16 from throughout Wales. The report describes how a representative sample of young people from maintained schools was sought using a sampling frame of 228 schools throughout Wales. Schools were stratified in terms of region and size of school and a number of classes was selected within each school so as to reflect importance of that year in terms of overall school population. No details are given of how pupils were recruited from within school classes or of the proportion of those selected to receive a questionnaire who returned one. We are told, however, that consent was asked of parents "when required" and that questionnaires were administered by a research company within schools.

The study questionnaire, which had both open ended and fixed category response questions is reproduced in full as an appendix. It contained questions about the extent to which respondents participated in specified activities, with lesson-time, extracurricular activity and activity in sports clubs and elsewhere in the community covered in turn. Further questions asked the young people how much they liked PE and games in school, asked them which they preferred and for their reasons why, and for activities which they would like to do which were not available to them. Young people who indicated that they did not do any or much sport were directed to questions which asked them to describe reasons for this. The questionnaire was similar to that used

in the 1991/2 studies, with additional questions. However there is no description of tests examining its validity or reliability. Confidentiality was assured and questionnaires were placed in sealed envelopes by respondents. Simple frequencies were calculated for closed response questions. The method of analysing responses to open-ended questions is not described.

The findings from the questionnaire-based survey are presented in a series of bar charts and tables. The report does not present the reasons given for low levels of activity. This possibly reflects the study's finding that almost all respondents reported some degree of physical activity. Swimming was the activity that most respondents wanted to but could not currently do. Rugby and football were the most reported unavailable activities among young women. In terms of the perceived value of specific activities, PE was generally liked, with 60% sample liked PE "a little" and a further 20% liked it "a lot". Games was preferred to PE by half of the sample, while 15% preferred PE to games.

The reporting of this study's methods was considered good by the reviewers, with it meeting five out of a potential seven quality criteria. Although methods of sampling were well described, it was considered that insufficient detail was presented on the final characteristics of the sample itself. No attempts to validate data analysis were described. Apart from the reasons for low levels of participation questions described above, this study did not directly ask young people for their views on what helped or got in the way of their taking part in physical activity. However it provides valuable findings relevant to Welsh schools, sports clubs and community organisations on activities that might be made more available to young people and highlights differences between young women and men's perceptions of unmet need.

The in-depth interview study described in this report (**SCWII**) was conducted after the representative sample survey described above by a separate group of researchers from University College, Swansea. The study aimed to examine young people's feelings to and attitude about sport and to establish some of the meanings young people give to sporting activity and how they view their own involvement and the involvement of others. Young people of both sexes were identified for interview partly through indications of interest given by respondents to the questionnaire described above. To identify a further selection of young people less committed to sport, interviewees were also selected by a snowball sample that built on the researchers' networks in the towns of Swansea and Maesteg. We are told that none of the participants were from an ethnic minority and Welsh speakers were a minority in the sample. We are also told how young women were over represented in this second sample because the researcher's initial contacts were female. There is no further discussion of the characteristics of young people who were interviewed, nor of those who were approached to participate in the study but declined. In addition, we are not told whether confidentiality was assured for this study or whether consent was requested to conduct the interviews, although consent was obtained to tape record the interviews.

The interviews were conducted with individual young people in their own homes, sometimes in the presence of parents. In terms of data collection, the interviewers are described as having a wide experience of working with young people, however there is no detail of the themes covered by the interviews and no specific reference to any previous publication that might examine the validity and/or reliability of the interview approach. We are also told very little

about the study's data analysis, simply that interviews were tape recorded and "direct quotations were ... grouped under thematic headings" [p37].

Findings are presented in a narrative format illustrated with quotes alongside those findings obtained from the questionnaire described above. They indicate that interviewees discussed their perceptions of different kinds of sport and talked of different factors that helped or hindered their participation. The authors present quotes to illustrate a number of conclusions about the way that young people look at participation, for example, that there is a work ethic operating for some, less recreational kinds of sport, and that young people tend to hold egalitarian views about their own and peers' participation but tend to revert to gender stereotypes when discussing adult participation, for example describing how adult women prefer aerobics and keep fit since this better suits their child and home oriented lifestyles. In terms of barriers to participation, young women described embarrassment over their physical appearance and respondents as a whole cited PE teachers' favouritism and bad weather being problematic. In terms of facilitators, young people specifically suggested that there should be more encouragement at sports clubs for "non sporty people", the development of extracurricular teams particularly for those who are less able, the provision of more sport at the County level for young women and that sport should be made more fun.

This study was also considered to meet five of the review's quality criteria, failing to describe its methods for data collection and data analysis sufficiently and, again, not describing any attempts to validate data analysis.

A short two page article in the Nursing Times by **Warburton (1998),** has a small section dedicated to describing the results of focus groups which were conducted to inform the development of an intervention to promote physical activity amongst young women. The article describes the results of the evaluation of this intervention. The author, who at the time of writing was a school nurse, had observed that the young people in her school (aged 14 to 15 years) were only able take part in 35 to 40 minutes of exercise per week within the school curriculum. With a view to improving participation rates amongst this group, the author conducted focus groups in two secondary schools in the Greater Manchester area, one in which the author was the school nurse and the other in a school in which the author was not known. No further details on methods are presented (e.g. how many young people were recruited, what questions they were asked etc.). The young people who took part in the focus groups were of mixed sex.

Although no data are presented, the author does summarise what she considers to be the main issues to arise out of the focus groups. The young people felt that the activities on offer at school were only acceptable to those who are 'sporty' and many young people (especially young women) felt that these were 'socially unacceptable' and did not fit into their lifestyles. The young women found aerobics to be an exciting, interesting and inviting form of exercise. The author notes that various factors such as the dance element, the 'funky loud music' and the clothes were all important in terms of why aerobics appealed to them. The author went on to organize an aerobic group for 15 to 16 year old young women to attend outside of school hours. The reported evaluation of this did not meet our methodological inclusion criteria for the in-depth review.

The reviewers did not consider this study to have met any of the seven quality criteria. This made it extremely difficult to assess the reliability or validity of the study findings. The reporting of data collection methods, for example, was such that it is impossible to know from this report whether young people were asked directly about barriers and facilitators. The absence of the young people's voices to substantiate the author's interpretations was, as with other studies, problematic.

7. SYNTHESIS ACROSS STUDY TYPES

Outline of Chapter

This chapter synthesises the findings from the different sections of the review. This is a particularly challenging exercise, in view of the different types of research included. Specifically the chapter looks at:

- *In what ways the **barriers** to physical activity **identified by young people** are **similar** to or **different** from those addressed by interventions; and*

- *The extent to which the **facilitators** of physical activity **identified by young people** have been used to develop interventions to promote their participation.*

The chapter will be useful to all audiences. In particular:

- ***practitioners, policy specialists, young people** and their **families and friends** are likely to find useful the examples presented of effective interventions which have addressed issues expressed by young people as either barriers or facilitators.*

- ***Researchers, research commissioners,** and **policy specialists** may find useful examples of matches and mismatches between what young people say is important for physical activity and soundly evaluated interventions. These highlight promising interventions to build on for development and evaluation.*

Key Messages

- *Effective interventions that addressed the barriers or build on the facilitators expressed by young people were identified in four areas: the school; physical and material resources; relationships with family and friends; and the self.*

- ***In schools**, young people identified specific barriers related to the way PE is provided. For young women in particular, this included a dislike of 'traditional' activities; inappropriate or inadequate facilities (e.g. gym kit, showers; the 'rules and arrangements' surrounding PE (e.g. lack of time for changing); and unsupportive teachers.*

- *None of the effective interventions directly addressed issues of gender and PE. One soundly evaluated intervention was effective in increasing participation in physical activity amongst women. This involved adopting a 'whole school' approach to promoting health but it is unclear whether this included efforts to reorganise the provision of PE.*

- *Young people recommended that school PE should involve consultation over choice of activities; 'non-traditional' activities such as aerobics and cycling. None of the effective interventions built on these facilitators.*

- *Relationships with **family and friends** presented some barriers to participation in physical activity. These included parental constraint (due to safety concerns; monitoring of leisure time; particular cultural values); fear of negative evaluation from peers (particularly from young men); and young women putting boyfriends' preference for leisure time activities first. Facilitators were identified as parental support and social support from friends.*

- *Two effective interventions have overcome some of these barriers and built on these facilitators. One intervention involved parents as well as young people through newsletters and family exercise days. This was effective for reducing cholesterol and blood pressure. In another intervention found to be effective for increasing young women's intention to be physical active in the future (but not for actual behaviour), the main aim was to increase peer support and to teach peer pressure resistance skills.*

- *Young people also recommended that physical activity could be encouraged by combining sports and (non-active) leisure facilities for socialising. No effective interventions were identified which built on this facilitator.*

- *In relation to the **self**, young people identified lack of confidence and competence; feelings of discomfort and self-consciousness about bodies (young women only); lack of motivation and 'inertia'; preference for other activities; and lack of knowledge about the benefits of physical activity as barriers. They also identified the social and psychological benefits of exercise as motivators.*

- *Two effective interventions included educational components emphasising the benefits of physical activity (both showed effects for young women only). It is not clear to what extent these also addressed other barriers such as lack of confidence.*

- *Young women endorsed articles on women taking part in physical activity in magazines.*

- ***Practical and material resources** were barriers in terms of time and money. Young people recommended: the creation of more cycle lanes; making activities more affordable; providing more acceptable forms of physical activity (e.g. not highly structured and organised by adults). Although young people feel that they have enough information on the facilities available for physical activity, some want more consensus about desirable levels of physical activity.*

- *No effective interventions were identified which built on these facilitators.*

- *For future development and testing, evaluated interventions which have methodological problems, but address barriers or build on facilitators identified by young people, will be a good starting point.*

This chapter attempts to synthesise the findings from the different sections of the report. This is a particularly challenging exercise, in view of the different types of research included. Specifically, the chapter looks at:

- In what ways the barriers to physical activity participation identified by young people are similar to, or differ from, those addressed by outcome evaluations

- The extent to which the facilitators of physical activity participation identified by young people have been used to develop interventions aimed at promoting their participation in physical activity

The synthesis was carried out by four of the report's authors using a matrix. This laid out the barriers and facilitators identified by young people alongside descriptions of the interventions included in the in-depth review of outcome evaluations (see appendix F).

The views of young people were examined for common and distinguishing characteristics. The following four broad areas describe the realms in which the barriers and facilitators appeared to lie: the school; family and friends; the self; and practical and material resources. The barriers identified by young people were grouped according to these areas, and formed the first column in the synthesis matrix. Facilitators were grouped in a similar way to create the second column, and then further grouped according to whether young people had identified them as factors that helped them take part in physical activity or factors that needed to be taken into account to promote this.

The four broad areas are amalgamations of the categories used to describe barriers and facilitators within this review's mapping exercise (chapter 2): 'family and friends' refers to most interpersonal and family factors; 'the self' stands for psychological factors; 'practical and material resources' describes structural factors. The final area, 'school' contains a variety of barriers and facilitators associated with the self, relationships, material and physical circumstances and socio-cultural factors, and illustrates how factors arising from the individual, community, and society interrelate.

Interventions evaluated in sound outcome evaluations as described in chapter 5 were then examined to see whether they aimed to address the barriers and facilitators identified in the studies of young people's views. When an outcome evaluation appeared to address a barrier or build on a facilitator it was listed in a third column in the synthesis matrix. The intervention it evaluated and its findings were described.

When none of the interventions within the set of sound outcome evaluations appeared to address barriers or build on facilitators identified by young people, those intervention evaluations judged to be 'not sound' in the in-depth review were scanned to see whether any matches could be identified. If so, these were listed in a fourth column in the synthesis matrix. Then, if matches within these outcome evaluations could not be identified, we searched for interventions within the set of outcome evaluations identified in the mapping exercise but not reviewed in-depth (described in chapter 3). This enabled an assessment of the extent to which intervention research addresses young people's views.

7.1 Matching young people's views to evaluated interventions: 'the school'

Barriers and facilitators identified by young people in the 'school' area centred on dissatisfaction with the way PE is currently taught and organized and with the facilities provided. These issues were particularly problematic for young women: they wanted more choice in the kind of activities on offer and felt that current facilities were inadequate and inappropriate for their needs. These barriers represented a desire to be treated as autonomous and with respect: some young women felt that teachers did not treat them seriously or with sensitivity and young people were frustrated regarding the lack of consultation around the PE curriculum.

The soundly evaluated interventions addressed some of the identified barriers. In Moon *et al.'s* (1999a) evaluation of the 'Wessex Healthy School Award' intervention was found to be effective in bringing about an increase in self-reported physical activity (for young women aged 15-16 years). Although the intervention tackled issues of school organisation, it is not clear what changes were actually implemented in relation to PE and to what extent they matched what young women wanted. Furthermore, the 'Know Your Body' Programme evaluated in the studies by Walter I (1989) and Walter II (1989) involved young people taking part in endurance exercises to build skills and strength, however, no information is provided on the type of activities undertaken. A similar problem exists in relation to Perry *et al*.'s (1987) study. Although one aspect of the 'Slice of Life' intervention involved getting young people to lobby for changes in the school environment, it is impossible to tell from the report of this intervention whether and to what extent these matched the kinds of changes identified as desirable by the young women, or to what extent the young people's suggestions were actually taken on board by those able to implement them. Furthermore, this intervention was not found to be effective in its impact on physical activity outcomes.

The suggestion from young women that they should be given more choice of activities, especially 'non-traditional' activities, was addressed in three interventions included in the in-depth review but judged by the reviewers not to have been soundly evaluated (Flores, 1995; Hopper *et al*., 1992; Vandongen *et al.,* 1995). These all provided programmes of physical activity which included activities such as dancing, gymnastics and 'health hustles' (moving to music). The intervention evaluated by Flores (1995) was based on the teacher's observations about young people preferring dance as an activity. However, it is unclear, given the quality of evaluations to date, whether or not these interventions are effective. As these kinds of interventions do seem to match what young people identify as barriers and facilitators, they need to be

judged as promising, but in need of further rigorous evaluation as to their effects.

Other barriers and facilitators related to school do not appear to have been selected by the reviewed intervention studies as worth addressing. These include changing PE facilities and the rules and arrangements surrounding these; increasing the sensitivity/ changing the teaching style of PE teachers; and increasing facilities for leaving bicycles at school. These represent significant gaps for research and development around physical activity promotion for young people.

The fact that some young men related their current participation in physical activity to positive experiences of school PE, underscores the possibility that the way physical education is currently taught in school facilitates participation in physical activity for young men but acts as a barrier to participation for young women. None of the interventions included in the in-depth review appeared to address directly ways in which PE could be made more appropriate for young women. However, it is encouraging to note the finding of Moon *et al*. (1999a) that it was amongst older young women (aged 15 to 16 years) that positive changes in physical activity occurred. Three interventions described in outcome evaluations included in the mapping, but not the in-depth review, have specifically tried to promote physical activity amongst young women. This was through the provision of an after school physical activity club for ethnic minority young women in the USA (Colchico *et al.,* 2000); an osteoporosis educational campaign in the UK (Edwards, 1998); and through an after school aerobic club, also in the UK (Warburton, 1998). However, the evaluations of these interventions were deemed to be not sound and it is unclear to what extent they were acceptable to young women or really addressed their needs. Interventions that claim to promote physical activity in ways which are relevant and acceptable to young women could be seen as promising interventions which need to be rigorously evaluated.

7.2 Matching young people's views to evaluated interventions: 'families and friends'

In the area of 'families and friends' young people's views revealed that parents and friends could act as both barriers and facilitators. Although parents were identified as a facilitator by men and women, in terms of providing both social and financial support, young women also identified parents as a barrier. As a barrier, parents could, for example, restrict young women's involvement in physical activity because of specific concerns for safety (in terms of the travelling involved in taking part in physical activities). Friends were identified in the main to act as a facilitator for young men and women, although some young men did highlight the effect of negative peer evaluation as a barrier. For young women, opposite sex relationships could be problematic for participating in physical activity. For example, boyfriends' priorities were said to determine how some young women spend their leisure time and mixed sex activities could be problematic due to self consciousness about bodies and appearance. In general, friends as facilitators reflected young people's desire to maximize opportunities for socializing with friends and the need for social support from friends, and the conflict between desire for autonomy and parental constraint reflects the wider position of young people (and young women in our society). These generalizations must also account for the subtle differences in the role of families and friends as barriers or facilitators

according to gender. This highlights how intervention developers and evaluators need to always consider the wider social context of the individual health behaviours that they are trying to promote.

Two of the soundly evaluated interventions came close to addressing these issues. The 'Slice of Life' programme (Perry *et al*., 1987) reported that one of its goals was to create peer support for participation in physical activity, but it is not clear from the reports of this study how or whether this was achieved. In addition, the intervention included a component which aimed to teach skills for resisting peer pressure to participate in unhealthy behaviour. However, the intervention was judged to have had no effect on physical activity outcomes. The school-based 'Know Your Body' Programme evaluated in the studies by Walter I (1989) and Walter II (1989) sought to encourage parental support for physical activity by producing newsletters and encouraging their attendance at family exercise classes and evening seminars. This intervention was judged effective for reducing blood cholesterol levels and systolic blood pressure in young people only in the evaluation which took place in the Bronx district of New York (Walter I, 1989) (Note that in the Westchester County district of New York the effects were judged by the reviewers to be unclear (Walter II, 1989)).

Of the interventions reviewed in-depth but judged not sound, 'Class of 89' (e.g. Kelder *et al*., (1993)) which was part of the community-wide intervention known as the Minnesota Heart Health Programme, also aimed to provide social support for young people to engage in physical activity. It could, in addition, have indirectly influenced family or other forms of inter-personal support through the provision of health screening and health promotion education and activities for the whole community. Again, it is not clear from the study reports how or whether this was achieved, and as the evaluation of this intervention was judged to be not sound, it is again unclear whether or not this approach is effective.

Because it is very difficult to tell exactly what these interventions did to encourage peer support or to help young people resist peer pressure, it is not clear whether they are really addressing the barriers and facilitators identified by young people. The fact that young women might put their boyfriends' priorities above their own again highlights the wider social context of many health behaviours. It is arguable that such a barrier can be conceptualised as 'peer pressure' which, given the right social skills, can be resisted.

The parental support facilitator identified by young people appeared in five interventions whose evaluations were judged to be not sound in the in-depth review (Baranowski *et al*., 1990a; Bush *et al*., 1989a, 1989b, 1990b; Hopper *et al.,* 1992; Nader *et al.,* 1989; Petchers *et al.,* 1987). These involved educational programmes which either brought young people and their parents together to engage in physical, or educated parents separately about the benefits of physical activity. The fact that their evaluations were judged to be not sound, however, means we cannot have any certainty as to their effectiveness.

None of the reviewed interventions matched the suggestion from young people to combine sport and leisure facilities to maximize their opportunities for socializing. None were identified in our mapping exercise either. This is particular significant as young people (especially young women) also identified a preference for socializing with friends rather than participating in physical activity.

7.3 Matching young people's views to evaluated interventions: 'the self'

From the synthesis matrix (see appendix F), it is clear that the identified barriers and facilitators in the area of the self have not been addressed by the interventions included in the in-depth review (soundly evaluated or otherwise). This may partly be due to the fact that the criteria for the in-depth review focused on interventions that aimed to make a change to young people's environment in addition to, or instead of, aiming to make a change to their 'inner space', through for example, increasing knowledge or fostering positive attitudes.

In this area, lack of motivation, feelings of inertia, and a preference for taking part in other activities are identified by young people as acting as barriers. Whilst preferences may be for solitary non-physical activities (e.g. watching television), many young people, as noted above, want to maximise their opportunities for socialising. Thus, combining physical activity with opportunities for socialising is a promising area for research and development.

Other identified barriers in this area seem to reflect underlying self-esteem/ self-confidence issues. This highlights the relationship between physical activity and mental health. The complexity of this relationship is illustrated by the conflict between the way some young people see the mental health benefits of physical activity as a motivation to take part, whilst a lack of confidence is seen by others as a reason for not taking part. None of the interventions included in the in-depth review appeared to address issues of confidence and self-esteem in relation to physical activity. It may be that factors such as not being good enough to take part and self-consciousness about bodies and appearance during physical activity are particularly salient in the context of doing physical activity with other people, especially with peers at school. In this context, changing the content of physical education and the way it is taught and organised at school so that it is more sensitive to the needs of less confident young people, may be a way of tackling these barriers.

Within the facilitators in this area, a distinction is made between facilitators identified by active and inactive young people. These highlight how intervention content may need to be different for trying to alter the behaviour of those young people who do not currently participate in physical activity, and maintaining or increasing participation for those who are already fairly active. None of the interventions included in the in-depth review appear to make this distinction.

It is interesting to note that young people do not refer to their own lack of knowledge as something that makes them less likely to participate in physical activity, and that awareness of the health and fitness benefits of exercise is not perceived to be a motivating factor. However, many of the interventions included in the in-depth review seem to base their health education components on imparting factual knowledge on the physiology of exercise or emphasising the health benefits of physical activity. Together with the finding that many young people are already convinced of the health benefits of exercise (see chapter 6), this appears to be a significant mismatch between young people's views and intervention studies. This finding is further strengthened by young people's views of what could and should be done in this area. Young women would appreciate 'teenage' magazines to contain

articles promoting physical activity, but did not want such articles to be instructional. They suggested instead 'real-life' stories about women participating in physical activity (Mitchell, 1997). This underlines the need for information about physical activity to be presented in ways which are relevant to young people's lives.

7.4 Matching young people's views to evaluated interventions: 'practical and material resources'

As the in-depth review specifically aimed to include interventions whose goal was to support young people by making changes at the community or society level (as opposed to solely aiming to influence young people's responses to their environment), it was disappointing that none of the interventions included in the in-depth review clearly addressed barriers of a practical or material nature identified by young people, or took up young people's suggestions on what could or should be done at this more socio-cultural or structural level.

Of outcome evaluations excluded from the in-depth review, four did appear to match young people's suggestions of this type. These all involved the provision of (free) opportunities to participate in a diverse range of activities through 'after school clubs' or through community based programmes (e.g. Colchico *et al.*, 2000; Hickmann, 1994). However, their evaluations were all judged to be not sound by reviewers in the mapping and quality assessment exercise. They therefore represent wasted opportunities for rigorous evaluations of interventions which seem to match what young people want.

7.5 Matching young people's views to developing, delivering and evaluating interventions

This chapter has highlighted important gaps in our knowledge with respect to translating identified barriers and facilitators into effective interventions. Matching the findings of studies focusing on young people's views with reports of evaluated interventions leaves reveals another important gap in our knowledge: how to best ensure that young people are consulted about their views. This review has not been able to identify the barriers and facilitators to involving young people in consultations, developing interventions or research.

8. DISCUSSION

Outline of Chapter

This chapter considers the implications of the findings of the review for current policy and practice and future research, setting the context for the conclusions and recommendations of the review. It ends with a reflection of the methods used to conduct this review and a consideration of their implications for conducting future systematic reviews.

The chapter will be useful to all audiences (practitioners, policy specialists, researchers, young people, their parents and friends), particularly section 8.1 which discusses what initiatives have been found to work, through high quality evaluations, in the promotion of physical activity. More specifically:

- ***Researchers** and those involved in developing interventions to promote physical activity (e.g**. practitioners**) may be most interested in the discussion of gaps in our current knowledge about barriers and facilitators and of promising new interventions to be developed (section 8.1).*

- ***Researchers** may also be interested in our reflections on the methodology used to conduct the review, the strategies developed for the critical appraisal and data extraction of young people's views studies, and the integration of findings from diverse study types (sections 8.4).*

- *For **policy specialists** and **practitioners** section 8.2 will be the most relevant as it contains and explicit discussion of the findings of the review in terms of current policy and practice. However, 8.3 should also be of interest to all audiences as it sets out how different readers should work in partnership to build the future evidence-base.*

8.1 What is known about the barriers to, and facilitators of, physical activity amongst young people?

Based on the different study types included in this review, we have identified a significant number of barriers to, and facilitators, of physical activity amongst young people, but we have also identified gaps where current knowledge is limited. Some of the main findings are that: few interventions which address community level or society barriers to support young people's participation in physical activity have been evaluated, and even fewer have been rigorously evaluated; young people have clear views on the barriers to, and facilitators of, their participation in physical activity, yet their views are often ignored in the development of interventions; and there is little research to guide promoting physical activity amongst socially excluded groups. This section discusses

how these findings fit with other literature on physical activity specifically and on health promotion with young people more generally. It identifies what is currently known and identifies research gaps.

Several previous systematic reviews exist which include at least some studies evaluating interventions to promote physical activity amongst young people aged 11 to 16 (Cambell *et al.,* 2001; Dishman and Buckworth, 1996; Pender, 1998; Resnicow and Robinson, 1997; Stone *et al*., 1998). They examined a wider range of intervention types than this review and the populations covered ranged from early childhood to old age, with some including studies on those with identified health problems. Whilst not directly comparable, the findings of these reviews, together with other literature, offer some support and further illumination of our findings. These relate to the following areas: promoting physical activity in the school; promoting physical activity through PE in school; the physical and social environment beyond the school; gender and physical activity; promoting physical activity in other settings; definitions and meanings of physical activity; and promoting physical activity amongst socially excluded groups. Highlighted in each of these areas when relevant are gaps for future research.

Promoting physical activity in the school: a 'whole school approach'?

The school was a key area in which young people identified a number of barriers and facilitators to their physical activity, and this also appears to be the setting in which the vast majority of intervention studies have been carried out. Whilst young people's concerns about the school appear to be mainly about the way PE is provided in schools, innovative intervention studies have a much broader focus.

There are distinct approaches to promoting health in schools (Lister-Sharp *et al*., 1999). Some rely solely on health education in the classroom to develop young people's knowledge and skills in relation to health behaviour. Others also pay attention to the importance of the social and physical environment on health. These develop multi-faceted or 'whole school' approaches which combine education with changes to the school's physical and social environment. These may also link into or stimulate initiatives within the wider community. The concept of the 'school ethos' is important in a whole school approach. This refers to factors such as the values of the school; the organisation and provision of curricular and non-curricular aspects of school life; the relationships between pupils and teachers; the relationships between the school, parents and the wider community; and its physical structures. The whole school approach has been adopted by the 'health promoting schools' initiative, which has been established in Europe by WHO (Parsons *et al.,* 1996).

The three interventions which had been rigorously evaluated for their effectiveness identified in this review were all implemented in schools, and aimed to address barriers arising from the school environment or build on family facilitators by including parents. However there were differences according to the populations involved in their evaluations and the contents of the intervention. Moon *et al*. (1999a) found that a whole school approach to health promotion was effective for young women aged 15 to 16 and Walter (1989) demonstrated that parental involvement combined with teacher led health education was effective for reducing cholesterol and blood pressure

amongst low-income African-Americans and Hispanics. Interestingly in the intervention study undertaken by Perry *et al*. (1987) which showed no effect on participation in physical activity, it was not clear whether environmental changes in the school were actually implemented (although young people 'lobbied' for them). This suggests the possibility that to be effective interventions need to actually make changes to a young peoples' wider environment to support them in being physically active, either through involving parents and/or adopting a 'whole school approach'.

Other systematic reviews have revealed similar factors related to the success of school-based interventions. In a meta-analysis by Dishman and Buckworth (1996) on interventions to promote physical activity in all age groups, a separate analysis for school-based studies revealed that interventions were most effective when they employed behaviour modification techniques, modified the PE curriculum or combined two or more types of intervention. The review by Resnicow and Robinson (1997) looked at studies which assessed the effectiveness of the promotion of physical activity as part of broader cardiovascular risk reduction activities in the school. Some of the interventions reviewed included making changes to the school canteen menus or modifications to the physical education curriculum and school health services. The results of their meta-analysis of 16 trials showed that significant positive effects were observed on a variety of cognitive, behavioural and physiological outcomes, in the areas of diet, smoking and physical activity. However, effects were inconsistent across studies. Using these inconsistencies to identify how interventions could be improved, they found that being theoretically based; increasing the quantity and quality of intervention delivery; involving parents; and combining school-based interventions with broader community and environmental change resulted in more consistent positive effects.

In their systematic review of the effectiveness of health promotion in schools, across a variety of topic areas, including physical activity, Lister-Sharp *et al*. (1998) concluded that a multi-faceted whole school approach is most likely to be effective. However they note that while this lends support to continued experimentation with the health promoting school approach, more ongoing evaluation is required.

The increasing interest and enthusiasm for promoting physical activity through a multi-faceted whole school approach, together with promising, but currently limited, evidence of its effectiveness, raises the importance of examining the barriers to, and facilitators of, this approach. All of the soundly evaluated interventions included in our review reported at least some detail regarding the processes involved in implementing these school-based interventions. Salient issues to arise included the importance of support for interventions from all levels of the school system; adequate training for teachers or peers delivering interventions; and the potential for some school staff and young people to be excluded from a 'whole school' approach to health promotion. Thus, alongside evaluations to establish the effectiveness of this approach, more research is needed on the factors influencing implementation of programmes within schools.

Resnicow and Robinson (1997) question whether in practice, a 'whole school' approach might result in 'diluted' effects of intervention components. This raises the possibility of whether such an approach for promoting physical activity diverts attention away from more fundamental issues about the way

PE is delivered in schools, which was the main concern of young people in relation to schools, especially young women. Although the emphasis in the 'health promoting school' approach on fostering good relations between staff and students fits with young people's concerns about 'unsupportive' and 'insensitive' PE teachers, it is not yet clear whether this approach does lead to improvements in the way PE is provided in schools. For example, in the evaluation of the whole school approach in the UK reported by Moon *et al*. (1999a), it is possible that changes to the PE curriculum or environment took place but lack of detail provided in the report prevents confirmation of this. This suggests the need to monitor more closely the specific changes which occur (or do not occur) within a whole school approach.

Promoting physical activity through PE in schools

As the promotion of physical activity has become a public health concern, PE has been seen as playing an increasingly important role. Although there is a large body of literature examining the way PE is taught and organised in schools (e.g. Green and Hardeman, 1998), we did not identify any studies for our in-depth review which explicitly evaluated the effect of changing aspects of the PE provision on subsequent participation in physical activity. A focus on health-related physical education has been adopted with the National Curriculum within the UK. This aims to promote exercise for health through PE, which is in stark contrast to 'traditional' PE. The characteristics of traditional PE have been identified by Kirk (1992) as: using command style teaching which emphasises group management at the expense of meeting individual needs; the dominance of competitive, especially team sports; and a concern with the development of technique and the biological functions of the body. In this respect, the move towards the teaching of health-related physical education may go some way to addressing dislike of 'traditional' PE expressed by many young women and some young men.

Harris and Cale (1997) reviewed evaluations of the effectiveness of this approach in secondary schools. They found that whilst positive benefits in terms of fitness, strength and flexibility have been found, few studies have examined the effects on long term continued participation. Indeed, many of the studies included in this review were excluded from ours, as they were judged to be about testing the basic efficacy of physical activity rather than promoting physical activity. Harris and Cale (1997) raise the following issues for the future of health-related physical education: the danger of focusing solely on fitness related outcomes at the expense of those in the behavioural or affective domain; the importance of training and supporting teachers; and potential impact of educational reforms on the quality of provision for PE.

The studies reviewed by Harris and Cale (1997) did not explicitly focus on the characteristics of teachers or the style of their teaching. Young people, especially young women, identified 'unsupportive' and 'insensitive' teachers as being a key factor in their dislike of PE. An example of an attempt to change the way PE is taught is reported by Marsh and Peart (1988). This was a physical fitness training programme for Australian eighth grade young women (aged 13 to 14) which contrasted a competitive approach to PE (e.g. with an emphasis on winning) with a co-operative approach (e.g. with an emphasis on encouragement and improvement) to ascertain effects on self-concept and

fitness. This study was not included in our in-depth review as it did not go on to examine the effect on subsequent participation in physical activity and was therefore judged not to be about the promotion of physical activity. Without a critical appraisal of its methodology it is difficult to interpret its findings with confidence, but the authors reported that although both styles of teaching increased levels of fitness, the co-operative approach was more effective at increasing self-concept.

Gender and physical activity

As highlighted above, gender needs to be an important consideration in the promotion of physical activity. From the studies in our review examining young people's views, much insight was gained into the consistent finding across prevalence studies that boys are more active than girls. Coakley and White (1992) and Mitchell (1997) found that restricted pathways are available to young men and young women as they negotiate the transition to adulthood, and for women, physical activity it not part of this pathway. Young women tended to identify less often with sports personalities and to see participation in sport as part of a phase that they had grown out of. However, for young men, participation fit easily into their leisure time and were more readily able to identify as 'sportsmen' even if their activity levels were actually quite low. This suggests that efforts to promote physical activity need to strike a balance between challenging dominant notions of 'masculinity' and 'femininity' whilst emphasising the types of physical activity young women and young men are interested in.

We did not identify any effective intervention studies focusing on gender in our in-depth review. Furthermore we only identified five intervention studies in the mapping exercise which focused on gender issues (Colchico *et al*., 2000; Leslie *et al*., 1999; Lloyd and Fox, 1992; Winett *et al*., 1999) and only two of these were potentially sound (Lloyd and Fox, 1992; Winett *et al*., 1999). All of these focused on increasing participation amongst young women. This lack of studies highlights an important research gap which has also been identified by other reviews (Stone *et al*., 1998).

In the course of conducting this review, we identified one further recently conducted evaluation of an intervention in the UK designed to promote 'girl friendly' physical education in schools (Kirk *et al*., 2000). The intervention adopted a whole school approach and involved collaboration between secondary schools and specialist sports colleges. Teachers were supported in planning and implementing a range of interventions such as changing showering policies; introducing single sex lessons; sports taster days; and a weekend family sports club. From its evaluation, teachers and students identified several barriers and facilitators to implementation including: the danger of complacency about keeping traditional practices; the formality of the physical education curriculum, and a blaming culture and attitudes of male physical education teachers. Problems in the design of the outcome evaluation of this study precludes drawing reliable conclusions about effectiveness. However, this study represents a good starting point for future controlled evaluations of interventions of this type.

Beyond the school: barriers and facilitators within the wider community

Our findings related to tackling barriers and facilitators within the wider community bring together several pertinent research gaps on: community-

based interventions; the promotion of active recreation or active lifestyles and the reduction of sedentary behaviour; and promoting physical activity amongst socially excluded groups.

Key recommendations from young people about how their physical activity might be promoted were about increased choice and facilities within the community. There was an emphasis on the need to develop the social side of physical activity and provide more opportunities for activities that were fun, with space and time for both single-sex and mixed activities.
Our review did not identify any effective interventions implemented in non-school settings. Indeed, our mapping exercise revealed few evaluations of interventions implemented in non-school settings at all. For example, we only identified seven in community settings, and of these only two met our criteria for in-depth review (Barownoski *et al*., 1990b; and Kelder *et al*., 1993). This highlights an important research gap. This is supported by the review by Stone *et al*. (1998) who found a similar shortage of studies of community-based interventions. They concluded that these revealed limited positive effects. Interventions in the community which focus on providing increasing access to facilities for physical activity seem to be promising interventions to develop and test in the future.

The majority of studies included in this review were confined to structured types of physical activity such as sport or exercise rather than active recreation or lifestyle in which being physically active is likely to be incidental (e.g. walking to school). Further, although some of the studies eliciting young people's views highlighted why they might prefer to be sedentary than active, none of the outcome evaluations included in the in-depth review measured changes in sedentary behaviours. Future studies of young people's views should explore the role of such incidental activity in their lives and intervention studies should test whether promoting this kind of activity can be effective, in particular for reducing sedentary behaviour (Biddle and Mutrie, 2001).

Some promising results in this area have been found in two previous reviews. A review by Sallis *et al*. (1998) focused on environmental or policy interventions in any setting, but for all age ranges. This included interventions aiming to increase lifestyle activity. This review found only seven studies and recommended that more evaluations should be undertaken, preferably using experimental designs. The authors were able to recommend placing signs to encourage stair use as effective intervention strategies on the basis of two studies employing an 'ABA' reversal or withdrawal design. Dishman and Buckworth (1996) reviewed interventions for adults delivered in a variety of settings and found that larger effect sizes were found for interventions delivered using mediated approaches (i.e. not face to face); when the physical activity was not supervised; and when 'leisure' physical activity of low intensity was promoted. However, the findings of this latter review need to be treated with some caution as effect sizes were much larger for interventions evaluated using quasi-experimental designs.

Our mapping exercise highlighted that there has been very little research on physical activity which attends to the diversity of young people according to key axes of inequalities such as socio-economic class; gender; and ethnicity. Gender has already been highlighted as a key issue for informing the development of interventions to be rigorously evaluated. Although a number of studies have evaluated interventions which are tailored for particular ethnic groups, these have all been conducted in the US. The fact that the majority of

studies identified in this review were conducted in school settings also raises questions about their relevance to young people who are excluded from school. Thus more research to explore the meanings and role of physical activity in the lives of socially excluded young people or those at risk of social exclusion is warranted. Such research has been given a boost from the current focus of UK health and wider government policy on tackling inequalities in health and social exclusion. We therefore recommend conducting an update to this review in two years time, during which it is likely that more research findings will be available.

8.2. Implications for current policy and practice

One of the main findings of this review is that there is limited reliable evidence on the effectiveness of interventions to promote physical activity. As most evaluations also come from the USA, there are issues of whether effective interventions will be transferable in a UK context. A key part of policy and practice surrounding promoting young people's participation in physical activity in the future will therefore be concerned with creating opportunities for promising or newly developed interventions to be rigorously evaluated according to both process and outcome as part of a co-ordinated research programme. This is discussed in more detail in the section 8.3.

This dearth of studies means the findings of this review are largely disappointing in terms of providing evidence that current policy initiatives will be effective. For example none of our intervention studies demonstrated in a reliable way the effectiveness of providing increased opportunities for active recreation such as those being initiated in the Sport Action Zones (e.g. providing after-school clubs). Similarly none of the interventions identified had evaluated the effectiveness of schemes to encourage active travel to school. Active transport to school is currently being encouraged by the DfES, the DTLR and the DoH, who have produced guidance for local authorities, schools and parents on building a safe environment for pupils to walk or cycle to school (e.g. enhancing footpaths and cycle lanes).
A paucity of evidence on the benefits of active transport has also been highlighted by a recently commissioned systematic review of the impact of mode of travel to school on children's social and cognitive functioning by DETR (Gough *et al*., 2001).

However, an exception to this is the positive findings of the Wessex Healthy Schools Award scheme (Moon *et al*., 1999a) which provides findings which may support for the DfEE and DoH National Healthy School Standard. The results of the process evaluation of this study may be particularly helpful for schools and those supporting them in earning accreditation in the scheme. For example, Moon *et al*. (1999a) found that barriers included lack of time and resources, whilst facilitators included the commitment of the staff, support from management, staff concern for pupils health and pupil's own awareness of health. This study also indicated that more effort and resources may need to go into training – only 50% of teachers reported that they had received training; and support staff felt excluded from the initiative despite being keen to contribute. Several challenges to conducting the evaluation was observed, including misconceptions of the purpose of the evaluation (it was suspected that the evaluation would be used to cast judgement on the school) and objections to some of the research procedures. This suggests that greater collaboration needs to be forged between researchers and schools.

Promoting physical activity in school settings can lead to positive effects, although it is not clear yet what are the essential components for success or whether the observed effects translate to long-term participation in physical activity. Studies included in this review suggest that a multifaceted or whole school approach is needed which doesn't ignore the specific way in which PE is organised or taught. In this respect, pledges by the DfES ~~to~~ help schools aspire to at least two hours of high quality physical education a week in the curriculum will be important. Considering the views of young people should will be important in determining what constitutes high quality PE in schools. The studies included in this review suggest the need to provide training and support to PE teachers to foster supportive and sensitive teaching strategies and for them to develop an appreciation of the importance of activities other than competitive sports and team games. Relaxing the rules and arrangements surrounding PE may also be particularly important for young women. These issues could be taken up in the implementation of the DCMS strategy for sport (DCMS, 2000) which proposes a framework for the continuing professional development of PE teachers, as well as ensuring that the PE needs of initial teacher trainees are met. These could be appropriate vehicles for encouraging a less authoritarian style of teaching specifically to appeal to young people who find PE traumatic. These issues also need to be incorporated into the Qualifications and Curriculum Authority (QCA) are producing guidance for helping school to achieve high quality PE.

The finding that young people (especially young women) would like to see changes in the facilities provided in school (e.g. bigger changing rooms, provision of hairdryers, appropriate clothing) is also highly relevant for initiatives from the DCMS which aim to refurbish school sports facilities and to open them up to the wider community. Such refurbishment could address these views.

Young people also identified issues to do with active transport to school, such as provision of secure storage facilities for bikes at school; more cycle lanes; and parental restrictions due to concerns about safety. Such measures could be implemented through partnerships with Local Education Authorities and Local Authorities. Evaluations involving random allocation to intervention and control schools could be set up with joint funding from the DoH and DETR. Random allocation should not be considered unethical or unfeasible by any partner as it is likely that under conditions of uncertain effectiveness funds for such schemes would not be available to all schools within one LEA. Random allocation therefore would be an ethical way of distributing finite resources with the added benefit of a rigorous evaluation.

As many of the interventions implied by current policy initiatives involve inter-agency partnerships and collaborations, further research is needed to evaluate models of best practice for such partnerships.

Opportunities for active recreation were also suggested by young people. In particular, places were they could go to exercise in combination with socialising such as clubs to dance in would be particularly welcome. These ideas need could be considered jointly by Health Action Zones and Sport Action Zones.

Two further key messages for policy and practice from the findings of this review are to always involve young people in the development and evaluation

of any initiative which aims to promote their physical activity; and to pay special attention to delivering interventions which are sensitively and appropriately tailored according to the key ways in which young people differ (e.g. gender, ethnicity).

8.3 Building the evidence base: lessons for the future.

A major finding of this review is that the evidence-base for the effectiveness of interventions to promote physical activity is small. The preceding section suggested that one way to meet this challenge is for services to work in partnership with researchers to build the evidence base. This section makes recommendations as to how such initiatives should be evaluated. Such recommendations need to be supported by an appropriate infrastructure to increase opportunities for practitioners, policy-makers, researchers and young people (and when appropriate their parents) to collaborate; initiatives to increase the research capacity of social and public health scientists in evaluation techniques; and adequate sources of funding which allow for long-term follow-up and samples of sufficient quantity for studies to be adequately powered to detect intervention effects.

Evaluating effectiveness

One of the main methodological findings of this review is that there is a considerable lack of rigorous evaluation of effectiveness in the area of physical activity promotion. Of the 12 potentially sound outcome evaluations which were in the scope of our in-depth review, only four were deemed to be of sufficient methodological quality to produce reliable results about the effectiveness of an intervention. Encouragingly one of these was from the UK. However, only four outcome evaluations were identified for the mapping stage of this review suggesting that outcome evaluations of physical activity promotion for young people (rigorous or otherwise) are rarely undertaken in this country, or that they are undertaken but their reports are not publicly accessible.

Common problems with outcome evaluations were employment of non-equivalent control or comparison groups and failure to report all pre-intervention data. These findings are similar to those of other systematic reviews examining a variety of different approaches to health promotion amongst young people. For example, previous reviews of peer-delivered health promotion, sexual health interventions for young people and for men who have sex with men and a review of the effectiveness of workplace health promotion, conducted at the EPPI-Centre have found similar proportions of outcome evaluations to be ‘sound’, and a similar scarcity of sound outcome evaluations conducted in the UK (Harden *et al*., 1999a; Oakley *et al*., 1996; Peersman *et al*., 1996; Peersman *et al*., 1998). Recent reviews in the HEA's effectiveness series (e.g. Tilford *et al*., 1997; White and Pitts, 1997) have come to similar conclusions.

Although there is a growing consensus about the need for outcome evaluations with integral process evaluations, only four of the 38 outcome evaluations identified in the mapping exercise of this review also conducted a

process evaluation. For the in-depth review too, only a small percentage of outcome evaluations also evaluated process. There is therefore an urgent need for evaluations to incorporate both process and outcomes.

One of the main findings of this review was that there have been few attempts to evaluate the impact of addressing the wider structural determinants of physical activity such as increasing access to facilities for active recreation and providing more cycle lanes. Whilst it is important to attempt to evaluate such initiatives in a rigorous way, there is a debate about the role of the RCT in such evaluations. Some have suggested that this is not an appropriate evaluation method and it may be better to make the best use of before and after assessments of 'naturally occurring experiments' (Nutbeam, 2001). A crucial challenge therefore is to reach some consensus on the issue of the feasibility of using RCTs to evaluate the impact of such interventions.

The problems associated with evaluating structural interventions were discussed by the scientific advisory group appointed to assist the preparation of the Acheson report. The group's role was to examine the strength of the evidence used to support recommendations on reducing health inequalities (Macintyre, 2001). The policy recommendations submitted to the group by experts in the field were seldom supported by sound evidence for effectiveness. Nevertheless, sound evidence generated by RCTs does exist in some areas. The need for better evidence is all the more necessary because some initiatives might actually increase health inequalities, or do other harm (Davey Smith *et al*., 2001). Macintyre and Petticrew (2000) explore some of the misconceptions about evidence-based policy and practice, including the assumption that the real world is too complex to evaluate using experimental methods and that social and public health interventions cannot do harm (see also Oakley and Fullerton, 1996; Oakley, 2000). Macintyre (2001) also provides examples of commonly used 'popular' interventions which are exposed as being ineffective or even harmful when the evidence from sound evaluations is taken into account. For example, the 'Scared Straight' intervention which aims to deter young people from crime is widely used in the US, but evidence from seven RCTs found that it actually increased delinquency rates (Petrosino *et al.,* 2000) Rather than adopting a defeatist attitude to evaluation using experimental methods, Macintyre argues that ingenuity should be employed to resolve some of the difficulties in assessing the impact of efforts to tackle the wider determinants of social and health problems. The establishment of several UK and international initiatives focusing on systematically reviewing the effectiveness of social interventions in fields such as education, criminology and social policy have the potential to stimulate methodological innovation and generate the 'ingenuity' required (e.g. Davies and Boruch, 2001; Oakley and Gough, 2000; Oliver and Peersman, 2001).

Gathering young people's views

The decision to privilege young people's own views about the barriers to, and facilitators of, their participation in physical activity has highlighted a number of useful lessons for the planning and development of future interventions. The studies usually employed cross-sectional survey methods using various types of quantitative and qualitative data collection and analysis methods. Although the quality of the studies varied enormously, and the quality assessment criteria distinguished studies of different quality, only two of the studies met all

seven of the criteria. Common problems were a lack of detail given on the methods used to recruit the sample; characteristics of the sample obtained; methods used to elicit young people's views (data collection); and methods used to analyse the data. All of these are needed to enable the reader to judge two things: firstly, to what extent the findings may be an artefact of the methods used; and secondly, to determine the parameters within which the findings are applicable (e.g. 'type' of young people represented and not represented in the sample).

The systematic examination and synthesis of the findings of these studies also offered considerable insight into different ways of eliciting young people's views and ways of involving young people in the development of efforts to promote physical activity. For example, the aims, approach and methods used in some of the studies meant that they could only draw very general conclusions about perceptions of young people. These studies often simply asked young people to rate a list of pre-determined statements with no indication of how these statements were derived (e.g. whether the language used was meaningful to young people). Although the findings of the studies provide a starting point for deciding which areas of possible concern to address, because these kinds of perceptions are presented somewhat out of context the study leaves lots of unanswered questions for the practitioner wanting to develop interventions. The findings do not tell us why young people hold a particular attitude to physical activity, or how they relate to everyday aspects of young people's lives.

There is also a question about to what extent the studies included in this review have really engaged with young people's own views about physical activity. This requires a thoughtful approach to choosing and developing data collection methods which will elicit not only the main barriers to, and facilitators of, young people's physical activity, but also why and under what circumstances these act as barriers or facilitators.

Finally, the studies of young people's views also raised the issue of how young people are really involved in the planning and decision-making processes to inform the development and evaluation of health promotion, and at what level. ~~to inform the development of health promotion young people is really involving them in the planning and decision-making processes~~. Only five of the studies actually directly asked young people what they thought could or should be done to promote their participation in physical activity (in particular see Harris, 1993; Mitchell, 1996; Mulvihill *et al*., 2000a). All the other studies inferred what should be done indirectly from what young people said. The methods used in the above three studies could be used as a starting point when trying to work in partnership with young people.

8.4 Methodological issues in conducting this systematic review.

The scope and boundaries of this review

It is important to note that our review focused on intervention studies which aimed to address barriers and facilitators at the community or society level. Therefore, interventions which *solely* focused on providing information to, or developing skills amongst young people were not subject to in-depth analysis.

Thus this review cannot draw any conclusions about whether interventions which involve developing say young people's confidence in taking part in sport could facilitate their participation in physical activity. If such studies were included in a future extension or update of this review, questions about the relative effectiveness of individual and environmental approaches could be addressed.

Similarly in terms of non-intervention research, we did not focus in-depth on studies which sought to infer young people's experiences primarily through *researcher description and characterisation of young people.* These studies involve developing and/or testing hypotheses derived from theoretical models and provide a description of young people's lives within the terms of the conceptual and analytical framework of the researcher. These studies can be seen as producing 'expert-driven' descriptions and often involve trying to establish the underlying mediators of participation in physical activity. Our decision not to include these studies does not mean that such studies are not important. Indeed by not including them it must be highlighted that the findings of this review may not be a fully comprehensive picture of the barriers to, and facilitators of, physical activity amongst young people. However, in the context of informing current policy and practice in the UK, we felt that a priority was to raise the issues that are important to young people. The broader range of non-intervention studies could explore in greater detail the underlying causes of exercise or physical activity.

Including 'qualitative research' in systematic reviews

The decision to include diverse study types in this systematic review has posed a series of challenges for this systematic review and for systematic reviews of social interventions more generally where these incorporate a wider range of 'evidence' than is traditionally considered. Different challenges occurred at each stage of the review process. In terms of searching, we found that routine methods of literature searching (e.g. bibliographic databases) were not very fruitful for locating studies of young people's views. Many were published in the 'grey' literature. This required making extensive use of personal contacts which was significantly more labour intensive. Often several phone calls had to be made in order to track down one report and, quite often it was only when we received a copy of the report that it became clear that it did not fit our inclusion criteria.

As there was no existing standardised way of extracting data and assessing the quality of these types of studies, the inclusion of studies of young people's views required us to develop new tools. The studies usually employed cross-sectional survey methods using various types of quantitative and qualitative data collection and analysis methods. Thus this review required us to develop criteria for assessing the quality of non-experimental research. Like the outcome evaluations and the systematic reviews, data extraction was often made difficult due to lack of detail on, for example, study sample, methods used and findings. This was often compounded by the fact that for some studies the only publicly accessible reports of the research were summaries of the research written for practice audiences.

Synthesising different types of evidence

This review has attempted to map the literature; extract detailed data, quality assess, and synthesise together, the findings from a range of different types of

research evidence on the barriers to, and facilitators of, good mental health amongst young people. This has represented a significant challenge for the traditional model of systematic reviews, which usually only include evidence generated from well-deigned experimental research. In undertaking this challenge we have been able to build on a descriptive mapping of health promotion for young people undertaken by Peersman (1996); two systematic reviews which aimed to integrate studies evaluating processes as well as outcome evaluations in the area of smoking cessation for pregnant women (Oliver, 2001) and peer-delivered health promotion for young people (Harden *et al.*, 1999a); and on the first review in the series on the barrier to, and facilitators of, mental health (Harden *et al*., 2001). This review represents a replication of the methods used in this first review. This has involved firstly, applying explicit and transparent methodology to the data extraction and quality assessment of 'non-intervention' research, and secondly, to the synthesis of findings from this research with findings from 'intervention' research. As such this piece of work represents a model for how the lessons learned from rigorous research which evaluates the effectiveness of interventions, can be combined with the those from research which aims to examine what the public needs and wants, to inform policy, practice and further research in health promotion.

This has proved to be especially useful in the light of finding few soundly evaluated studies examining effectiveness. Systematically synthesising the findings from young people's views on barriers and facilitators has allowed for detailed recommendations on interventions which need to be developed and evaluated further. These are outlined in the final chapter of this report.

As there is no precedent to the methods we have adopted in this review, we need to engage in a process of careful reflection about both the 'pros' and the 'cons' of our approach. In line with the principles underlying systematic reviews, we have tried to spell out in as much detail as possible how we searched for, classified and quality assessed studies included in this review, and have also tried to be as explicit as possible in how the findings of the studies have led to our recommendations. Although we used various methods to ensure that our review findings were not distorted by researcher bias (e.g. using two researchers independently to undertake many stages of the review), we cannot be sure that if we used different methods or a different team of researchers the conclusions of the review would be the same. Further empirical work building on our methods might usefully address these issues.

9. CONCLUSIONS AND RECOMMENDATIONS

Outline of Chapter

This chapter comments on the evidence available from research about young people's views and healthy eating interventions. It lists effective interventions that can be implemented more widely; interventions needing rigorous evaluation; ways in which young people can be more involved; and recommendations for conducting and reporting research.

The chapter will be useful to all audiences (practitioners, policy specialists, researchers, young people, their families and friends). More specifically:

- ***Policy specialists** may particularly like to consider the effective interventions listed in section 9.1. They may also like to consider encouraging practitioners and researchers to take up the recommendations for future development and evaluation of interventions (section 9.2), involving young people in this work (section 9.3), and conducting and reporting research (section 9.4).*

- ***Practitioners** may be particularly interested to read about the effective interventions (section 9.1), and the recommendations for future development and evaluation of interventions (section 9.2), involving young people in this work (section 9.3).*

- ***Researchers** will find information relevant to their work about future development and evaluation of interventions (section 9.2), involving young people in this work (section 9.3), and conducting and reporting research (section 9.4).*

- ***Young people, their families and friends** might be most interested in section 9.3 which supports the case for actively involving young people in services and research for their benefit.*

We recommend:

- *adopting 'whole school' approaches physical activity promotion;*

- *within such an approach, the development and evaluation of initiatives to modify the organisation and provision of PE;*

- *further evaluation of interventions to improve access to diverse range opportunities for physical activity;*

- *further evaluation of interventions which aim to combine sport and (non-active) leisure facilities;*

- *the development and evaluation of interventions which aim to foster a supportive environment for undertaking physical activity;*
- *consideration of gender, ethnicity, socio-economic class and current activity levels when developing interventions;*
- *consideration of both structured (e.g. exercise and sport) and unstructured forms of physical activity (e.g. walking to school), as well as sedentary activities;*
- *involving young people in the development of interventions;*
- *conducting and reporting research more rigorously; and*
- *encouraging researchers and practitioners to work in partnership with young people when undertaking this work.*

The aim of the review described in this report was to survey what is known about the barriers to, and facilitators of, physical activity participation amongst young people with a view to drawing out the implications for policy. The review has mapped and quality screened the extant research in this area, and brought together the findings from evaluations of interventions aiming to promote physical activity and studies which have elicited young people's views.

A first major finding is that, whilst there has been a significant amount of research activity in this area, there is insufficient good quality research evaluating the effectiveness of interventions to promote physical activity, particularly in the UK. There are even fewer rigorous evaluations of the kinds of interventions which were the focus of the in-depth review – those which aimed to make a change to young people's social and physical environment to support them in increasing their participation in physical activity. There has been much less research in this area than for topics such as sexual health; drugs; smoking prevention or mental health (Peersman, 1996). The review only identified four rigorous outcome evaluations, one of which showed that interventions can be effective for increasing physical activity amongst some groups of young people in the UK. It is thus not yet clear what the key components of effective interventions are, whether there are any long term benefits, and to what extent these conclusions about effectiveness are generalisable.

A second major finding is that young people have clear views on the barriers to, and facilitators of, their participation in physical activity. These provide an important source of information which needs to be considered in any attempts to promote their physical activity. When considered in conjunction with findings about the effectiveness of interventions, such views highlight a number of promising ways in which to develop and test future physical activity promotion interventions. Currently, interventions evaluated by good quality research do not always target what young people themselves see as the main barriers to

exercise and sport and do not always build upon what they see as the main facilitators. A major discrepancy in this respect is that, whilst practical and material resources are seen by young people as having a major influence on their participation, there are few evaluated interventions which have targeted such structural factors at the wider societal level. A further major discrepancy is that young women expressed considerable dissatisfaction with the organisation, teaching, and facilities available for participating in physical activity at school and this has not been taken up as an issue in good quality intervention research.

A third major finding is that there is currently little research about the promotion of physical activity for socially excluded groups. This is a significant research gap since current health policy in the UK has a clear commitment to tackling the wider determinants of health and inequalities in health.

Whilst the evidence base is limited, a number of specific conclusions and recommendations for current policy and practice and the future development of interventions to promote physical activity amongst young people can be spelt out. It is also possible to suggest improvements in evaluation studies in this area, and ways of involving young people in research.

9.1 Recommendations for promoting physical activity amongst young people

This set of recommendations is based on the review's findings from the three interventions whose impact has been assessed in well-designed outcome evaluations. Because of this small pool, clear patterns could not be identified and results from individual studies may not be generalisable. In particular, caution is needed when transferring findings from US studies to the UK. Nevertheless, we recommend the following be considered for implementation.

- ***A 'whole school' approach (i.e. one involving all members of the school community in developing and implementing health promoting changes in school organisation and structure) can be effective for increasing the physical activity levels of young women aged 15 to 16 years.*** An intervention implemented in the UK which aimed to support a 'whole school' approach to promoting health by encouraging schools to make changes in their organisational structure and philosophy was found to be effective for increasing physical activity in young women (Moon *et al*., 1999a, 1999b).

- ***An intervention which supplements peer-delivered health education with involving young people in lobbying for health supporting environmental changes in the school may not be effective specifically for physical activity but can be effective for increasing healthy eating amongst 14 to 15 year olds.*** An intervention which implemented a peer-delivered health education curriculum and involved young people in lobbying for health supporting environmental changes in the school in the US was not found to be effective on measures of self-reported physical activity but was found to be effective for some healthy eating outcomes mostly in young women (Perry *et al*., 1987).

- ***An intervention which integrates teacher-led health education; risk factor screening and feedback; and parental involvement can lead to positive changes in cholesterol and blood pressure in low-income ethnic minority groups***. A five year intervention in the US which integrated teacher-led health education; risk factor screening and feedback; and parental involvement (e.g. family exercise days, parent education on supporting children in maintaining healthy behaviour) was found to be effective in reducing cholesterol and blood pressure in low-income African-American and Hispanic young people (Walter I, 1989).

9.2 Recommendations for the future development and evaluation of interventions to promote physical activity amongst young people

This set of recommendations is based on interventions included in this review which look 'promising' but which have not yet been evaluated in a rigorous way or are from the mapping of physical activity promotion research literature (and therefore not included in the in-depth review). These interventions need to be developed and evaluated further. In addition, recommendations are made where gaps in interventions yet to be evaluated have been identified. 'Promising' interventions have been identified from those which match young people's views about the main barriers to, and facilitators of, their physical activity, and gaps have been identified from mismatches between interventions and young people's views. These all support our recommendation for ***researchers, practitioners, young people and other stakeholders to work in partnership to develop and rigorously evaluate interventions for their effectiveness and appropriateness***. If interventions are implemented without prior evaluation it must be accepted that this is being done in the knowledge that they may not work and may even result in harmful effects. Recommendations on how interventions should ideally be evaluated for their effectiveness are given in 9.4 below.

- ***Interventions which aim to increase the range of 'free' diverse activities through after-school clubs and community-based initiatives need to be evaluated further.*** Young people suggested that a wider range of activities at a more affordable cost would help them to participate.

- ***Interventions which improve community and school facilities for bicycling*** through creating bicycle lanes and adequate storage facilities, for example, need to developed and tested for their effectiveness.

- ***Interventions which aim to improve the physical education facilities at school and the rules and arrangements surrounding physical education need to be developed and tested to increase participation especially by young women.*** Making the environment more suitable to young women's needs in particular (e.g. adequate changing facilities appropriate gym kit) may improve their desire to participate in physical activity.

- ***Interventions which make physical education programmes more appealing by providing young people with the choice about the type of physical activity and how and where it takes place need to be evaluated further.*** Both outcome evaluations and young people's views studies highlighted the need for more non-traditional physical activity programmes, such as aerobic dance, especially for young women. Having some control over how the intervention was delivered (e.g. choosing the music to dance to) may increase participation. Young people suggested that they would appreciate increased access to clubs to dance.

- ***Interventions which emphasise the fun and social aspects of physical activity need to be developed and evaluated.*** This could be accomplished by combining sport and leisure facilities, which would allow socialising, an aspect of physical activity important to young women.

- ***Interventions which emphasise a supportive environment to improve young people's self-confidence need to be further evaluated.*** Young people, especially young women, identified feelings of discomfort, self-consciousness and lack of confidence in relation to taking part in physical activity. Emphasis on an environment which both encourages young people individually and encourages them to support one another in a positive manner could have beneficial effects on participation.

- ***Interventions need to consider the inter-relationships between physical activity and mental health.*** This means that physical activity interventions should not be conducted in isolation, as mental health interventions to improve self-esteem could include physical activity interventions, and vice versa: interventions to promote physical activity may engineer an increase in overall self-esteem. Researchers considering developing and testing new interventions might want to test whether they can be successfully integrated.

- ***Gender issues need to be given important consideration in any future developments of efforts to promote physical activity.*** Strong differences according to gender emerged across the findings of the outcome evaluations and young people's views' studies. These related to the different meanings men and women attach to the concept of 'physical activity' and the role it plays in their lives and to views on what helps and what stops them take part in physical activity. For young women some of these differences are compounded by wider gender inequalities in society. These issues need to be carefully considered and used to inform the development of tailored interventions for men and women. For example, young people's views studies suggested that young women would like the opportunity to take part in 'non-traditional' activities such as aerobics, ice-skating, swimming or cycling.

- ***Interventions need to be tailored according to whether young people consider themselves active or inactive.*** Facilitators for participating in physical activity are different for young people depending on whether they see themselves as 'active' or 'inactive'. For example, currently active young people are motivated by the social

benefits of exercise and competitiveness. Currently inactive young people are motivated by increased feelings of well-being. Therefore, interventions need to be developed with this important difference in mind.

- ***Consideration needs to be given to the wide range of activities encompassed by the term physical activity.*** This should include structured (e.g. exercise and sport) as well as unstructured activities (e.g. walking to school, active recreation). Promoting these different types may require different approaches. More research on the role and meaning of unstructured or incidental activity in young people's lives is needed.

9.3 Recommendations for involving young people in the development of interventions

This set of recommendations gives guidance for how practitioners and researchers can work in partnership with young people to develop interventions to promote their physical activity.

- ***Young people's views should be the starting point for any future developments of efforts to promote physical activity.*** The barriers to their physical activity revealed four main themes: school; family and friends; practical and material resources; and the self.

- ***Young people should always be consulted on matters concerning the promotion of their physical activity***. This is not only an ethical imperative but also crucial in the development of potentially effective and acceptable interventions. Currently, from the information provided about the majority of evaluated interventions, young people have not been consulted either in intervention development or in the evaluation of intervention processes.

- ***Young people should, therefore, be involved as equal stakeholders in future agenda-setting for physical activity promotion***. Young people have valuable knowledge about the barriers and facilitators to their participation in physical activity and want relevant, correct information and advice on matters of physical activity delivered to them in an appropriate manner by people they consider suitable.

- ***Young people should be asked directly for their views on what could or should be done to promote their participation in physical activity.*** The studies examining young people's views in this review rarely asked young people directly for their views on what should be done.

- ***The views of socially excluded groups such as those on low-incomes, from minority ethnic groups, those excluded from school and those with disabilities need to be sought.*** Although many studies included in this review examined the views of young

women, none focused on other key axes of inequality.

- ***Young people, as well as other stakeholders, should also be involved in planning the evaluation of the intervention.*** Their views will be valuable in choosing appropriate and meaningful outcome and process measures.

- ***This review should be used as a resource by intervention developers as a starting point for eliciting young people's views.***

- This review should be extended to address the barriers and facilitators to involving young people in consultations, developing interventions or research. ***Such a review should collate the methods employed to involve young people in consultations and research generally, and consider the applicability of these methods for developing and evaluating interventions.***

9.4 Recommendations for conducting and reporting evaluations of interventions and research on young people's views

- ***When possible, outcome evaluations should be conducted using the design of a randomised controlled trial using either individuals, families, schools, geographical areas or Local Education Authorities as units of allocation.*** Whilst it is recognised that there are circumstances when this might not be possible, there are currently many missed opportunities for employing this design to evaluating effectiveness. Researchers need to work with practitioners (e.g. teachers, health promoters, Local Education Authority officials) to make use of opportunities to evaluate interventions in this way. Policy-makers and research commissioners need to allocate sufficient funds to support this.

- ***Outcome evaluations designed in this way are needed for: active transport to school schemes; provision of opportunities for active recreation in the community; and changes to school PE provision.***

- ***Outcome evaluations should measure long term behavioural or physical health status outcomes as well as intermediate outcome measures such as changes in school policies or opportunities to participate in physical activity***. Too many studies still use only knowledge and attitudes as outcomes, measured immediately after an intervention has ended.

- ***Outcome evaluations should always attempt to conduct integral process evaluations.*** Only 6% of the outcome evaluations included in our mapping and quality assessment exercise did this. Well-conducted process evaluations can offer valuable insights into the reasons for the success (or otherwise) of interventions. Process evaluations should always elicit the views of those involved in delivering or receiving the intervention and should monitor the contextual variables impacting on its implementation.

- ***Key aspects of the methodology and results of outcome evaluations need to be reported in a detailed and consistent manner to promote confidence in their rigour***. Outcome evaluations reviewed here did not consistently report pre-test and post-test data of all participants as recruited into the study; establish the equivalence of intervention and control groups; or report the impact of the intervention for all outcomes targeted. These key aspects need to be reported as a minimum benchmark of quality. Where publication word limits will allow, further information should be provided on the aims of the study; information on the method of randomisation where used; complete reporting of numbers of participants assigned to intervention and control groups; thorough enough reporting of interventions and evaluation to allow replicability; and complete reporting of attrition rates. For example, a more detailed description of the activities which took place in each of the schools in the Wessex Healthy School Award study is needed. This intervention was determined to be effective, yet more information is needed on the content and delivery of specific components of the intervention in order for it to be replicable.

- ***Studies examining young people's views need to engage young people in a dialogue that is meaningful to them***. Studies often used checklists of pre-determined statements for young people to respond to with no details of whether these were derived from what young people see as important or whether young people found the language used appropriate.

- ***The reporting of studies of young people's views and process evaluations also need to be more complete, as basic data are often missing.*** Detailed descriptions of the selection and recruitment of the sample; the methods used to collect and analyse data; and sample characteristics should always be presented. In addition, attempts to ensure the reliability and validity of the data collection and data analysis methods need to be made. An outline of how the study's findings contribute to the existing knowledge base should also be included.

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APPENDIX A: Search strategies

MEDLINE

Implemented on PubMed for 1995 - September 2000. For the search strategy used to search for studies prior to 1995 see the section 'BiblioMap' below.

A. Search terms for adolescents and young people:

young people[TI] OR young people[AB] OR young adult*[TI] OR young adult*[AB] OR youth[TI] OR youth[AB] OR juvenile[TI] OR juvenile[AB] OR teenager*[TI] OR teenager*[AB] OR adolescent*[TI] OR adolescent*[AB] OR school student*[TI] OR school student[AB] OR dropout*[TI] OR dropout*[AB] OR pupil*[TI] OR pupil*[AB]

B. Search terms for health promotion / illness prevention:

prevent*[TI] OR reduc* [TI] OR promot* [TI] OR increase*[TI] OR intervention*[TI] OR program*[TI] OR curriculum*[TI] OR educat*[TI] OR project*[TI] OR campaign*[TI] OR impact*[TI] OR risk factor*[TI] OR vulnerability[TI] OR resilien*[TI] OR protect*[TI] OR
factors associated[TI] OR correlates[TI] OR predict*[TI] OR determin*[TI]

C. Search terms for health promotion and determinants of physical health or physical ill health:

risk[MH] OR risk factors[MH] OR culture[MH] OR lifestyle[MH] OR risk-taking[MH] OR knowledge, -attitudes, -practice[MH] OR adolescent-behavior[MH] OR adolescent-psychology[MH] OR cross-cultural-comparison[MH] OR comparative study[MH] OR socioeconomic factors[MH] OR
race-relations[MH] OR cultural-deprivation[MH] OR urban-population[MH] OR student-dropouts[MH] OR juvenile-delinquency[MH] OR homeless-youth[MH] OR health-promotion[MH] OR health-education[MH] OR primary-prevention[MH] OR behavior-modification[MH] OR behavior-therapy[MH] OR program-evaluation[MH] OR intervention-studies[MH] OR outcome-assessment-health-care[MH] OR single-parent[MH] OR poverty[MH] OR unemployment[MH] OR minority groups[MH] OR attitude[MH] OR attitude to health[MH]

D. Search terms for physical activity:

((((((((("sports"[MeSH Terms] OR "exercise"[MeSH Terms] OR exercise[Text Word]) OR ("exertion"[MeSH Terms] OR exertion[Text Word])) OR ("physical education and training"[MeSH Terms] OR physical-education-and-training[Text Word])) OR ("physical endurance"[MeSH Terms] OR physical endurance[Text Word])) OR ("physical fitness"[MeSH Terms] OR physical

fitness[Text Word])) OR ("leisure activities"[MeSH Terms] OR leisure activities[Text Word])) OR "physical activity"[All Fields]) OR "physical exercise"[All Fields]) OR (physical[All Fields] AND inactivity[All Fields])) AND notpubref[sb])

E. Search terms for healthy eating:

diet therapy OR nutrition/ education[mh] OR obesity/pc[mh] OR obesity/px[mh] OR obesity/th[mh] OR weight loss OR food preferences OR feeding behavior OR food habits OR diet, reducing OR diet[mh] OR healthy eating OR adolescent-nutrition OR diet-surveys OR diet records OR health food OR diet fads OR nutrition surveys OR nutrition assessment

F. Final result

A AND (B OR C) AND (D OR E)

EMBASE

Implemented from 1995 - September 2000. For the search strategy used to search for studies prior to 1995 see the section 'BiblioMap' below.

A: Search terms for physical activity, physical inactivity or mediators of physical activity

breathing exercise OR dynamic exercise OR exercise OR exercise tolerance OR fitness OR leisure OR physical activities (expl) OR physical education OR recreation OR sports

B. Search terms for healthy eating

obesity/ all subheadings OR body weight/ all subheadings OR weight reduction/ all subheadings OR
hypertension/ all subheadings OR nutrition/ all subheadings OR diet/ all subheadings OR dietary intake/ all subheadings OR feeding behavior/ all subheadings OR eating habit/ all subheadings OR
food preference/ all subheadings OR nutritional health/ all subheadings OR nutritional status/ all subheadings OR nutritional value/ all subheadings OR eating/ all subheadings OR cholesterol blood level/ all subheadings OR cardiovascular disease/ all subheadings OR hypercholesterolemia/ all subheadings

C: Search terms for prevention/promotion and barriers/opportunities

(prevent* in TI) OR (reduc* in TI) OR (promot* in TI) OR (increase* in TI) OR (intervention* in TI) OR (program* in TI) OR (curriculum* in TI) OR (educat* in TI) OR (project* in TI) OR (campaign* in TI) OR (impact* in TI) OR (risk factor* in TI) OR (vulnerability in TI) OR (resilien* in TI) OR (protect* in TI) OR (factors associated in TI) OR (correlates in TI) OR (predict* in TI) OR (determinant* in TI)

OR

HEALTH-EDUCATION / all subheadings OR HEALTH-PROMOTION / all subheadings OR
EDUCATION / all subheadings OR EDUCATION-PROGRAM / all subheadings OR HEALTH-PROGRAM / all subheadings OR BEHAVIOR-THERAPY / all subheadings OR BEHAVIOR-MODIFICATION / all subheadings OR EVALUATION-AND-FOLLOW-UP / all subheadings OR
EVALUATION / all subheadings OR PREVENTIVE-MEDICINE / all subheadings OR LIFESTYLE-AND-RELATED-PHENOMENA / all subheadings OR LIFESTYLE / all subheadings OR
LIFE-EVENT / all subheadings OR RISK / all subheadings OR RISK-ASSESSMENT / all subheadings OR RISK-FACTOR / all subheadings OR HIGH-RISK-POPULATION / all subheadings OR PREVENTION / all subheadings OR PREVENTION-AND-CONTROL / all subheadings OR
PRIMARY-PREVENTION / all subheadings OR CURRICULUM / all subheadings OR COGNITIVE-THERAPY / all subheadings OR explode ETHNIC-OR-RACIAL-ASPECTS / all subheadings OR PROTECTION / all subheadings OR UNEMPLOYMENT / all subheadings OR SOCIAL-PROBLEM / all subheadings OR CULTURAL-DEPRIVATION / all subheadings OR HOMELESSNESS / all subheadings OR CULTURAL-ANTHROPOLOGY / all subheadings OR PSYCHOLOGICAL-ASPECT / all subheadings OR SOCIAL-ASPECT / all subheadings OR ECONOMIC-ASPECT / all subheadings OR SOCIAL-CLASS / all subheadings OR DISABILITY / all subheadings OR LEARNING-DISORDER / all subheadings OR URBAN-POPULATION / all subheadings OR
URBAN-RURAL-DIFFERENCE / all subheadings OR HUMAN-RELATION / all subheadings OR
FAMILY-LIFE / all subheadings OR CONFLICT / all subheadings

D: Search terms for young people or adolescents

(young people in TI) OR (young people in AB) OR (young adult* in TI) OR (young adult* in AB) OR (youth in TI) OR (youth in AB) OR (youth in DEM) OR (juvenile* in TI) OR (juvenile* in AB) OR (juvenile* in DEM) OR (teenager* in TI) OR (teenager* in AB) OR (adolescent* in TI) OR (adolescent* in AB) OR (adolescent* in DEM) OR (school student* in TI) OR (school student* in AB) OR (school student* in DEM) OR (dropout* in TI) OR (dropout* in AB) OR (pupil* in TI) OR (pupil* in AB)

E. Final result

(A OR B) AND C AND D

Psycinfo

Implemented via WinSpirs for 1967 - October 2000.

Search terms for adolescents or young people:

#1	young people in TI, AB
#2	young adult* in TI, AB
#3	youth in TI, AB
#4	youth in DE
#5	juvenile* in TI, AB
#6	juvenile* in DE
#7	teenager* in TI, AB
#8	adolescent* in TI, AB
#9	adolescent* in DE
#10	school student* in TI, AB
#11	school student* in DE
#12	dropout* in TI, AB
#13	dropout* in DE
#14	pupil* in TI, AB
#15	pupil* in DE
#16	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15

Search terms for health promotion / illness prevention and determinants of physical health or physical ill health:

#17	self esteem in ti
#18	self concept in ti
#19	empower* in ti
#20	prevent* in ti
#21	promot* in ti
#22	intervention* in ti
#23	program* in ti
#24	curriculum* in ti
#25	educat* in ti
#26	campaign* in ti
#27	impact* in ti
#28	risk factor* in ti
#29	stress management in de
#30	ethnic identity in de
#31	sociocultural-factors in de
#32	health education in de
#33	lifestyle-changes in de
#34	prevention in de
#35	educational-therapy in de
#36	program evaluation in de
#37	at-risk-populations in de
#38	dropouts in de
#39	potential dropouts in de
#40	school dropouts in de
#41	social deprivation in de
#42	disadvantaged in de
#43	homeless in de
#44	juvenile-delinquents in de
#45	disadvantaged in de
#46	poverty in de
#47	disabled in de

#48 #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47

Search terms for physical activity

#49 Sports in de
#50 Sports in ti, ab
#51 Exercise in de
#52 Exercise in ti, ab
#53 Physical-Education in de
#54 Physical-Fitness in de
#55 Physical-Endurance in de
#56 Leisure-Time in de
#57 Leisure-Time in ti, ab
#58 Physical activity in ti, ab
#59 Recreation in de
#60 Recreation in ti, ab

#61 #49 or #50 or #51 or #52 or #53 or #54 or #55 or #56 or #57 or #58 or #59 or #60

Search terms for healthy eating:

#62 Nutrition in ti, ab
#63 Nutrition in de
#64 Diets- in de
#65 Diet in ti, ab
#66 Obesity in de
#67 Obesity in ti, ab
#68 Food intake in de
#69 Food preferences in de
#70 Food in ti, ab
#71 Eating in de
#72 Eating attitudes in de
#73 Eating in ti, ab

#74 #62 or #63 or #64 or #65 or #66 or #67 or #68 or #69 or #70 or #71 or #72 or #73

Final result

#75 #16 and #48 and (#61 or #74)

ERIC

Implemented via Ovid/BIDS for 1984 - June 2000.

A. Search terms for adolescents and young people:

youth.ti,ab. or teenagers.ti,ab. or young people.ti,ab. or young adults.ti,ab. or adolescents.ti,ab. or Adolescents/

B. Search terms for health promotion / illness prevention:

Health activities/ or Health education/ or Health programs/ or Health promotion/ OR Health materials/ OR Behavior change/ or Behavior modification/ or Intervention/ OR Crime prevention/ or Dropout prevention/ or Prevention/ or Preventive medicine/ or Risk management/ or Evaluation/ or Formative evaluation/ or Needs assessment/ or Summative evaluation/ or Outcome based education/ or Outcomes of education/ or Program effectiveness/ or promot$.ti. or increas$.ti. or prevent$.ti. or intervention$.ti. or program$.ti. or curriculum.ti. or health educat$.ti. or project$.ti. or campaign$.ti. or impact.ti. or reduc$.ti.

C. Search terms for health promotion and determinants of physical health or physical ill health:

Disadvantaged/ or Disadvantaged environment/ or Educationally disadvantaged/ or Poverty/ or Poverty areas/ or Unemployment/ or Economically disadvantaged/ or Homeless people/ or Low income groups/ or Low income/ or Lower class/ or Poverty programs/ or Dropout characteristics/ or Dropout prevention/ or Dropout programs/ or Dropouts/ or Out of school youth/ or Potential dropouts/ or Truancy/ or Ethnic stereotypes/ or Racial attitudes/ or Racial discrimination/ or Black stereotypes/ or Cultural differences/ or Ethnicity/ or Disability discrimination/ or Learning disabilities/ or Ghettos/ or Urban population/ or Urban youth/ or risk/ or Delinquency/ or Delinquency prevention/ or Delinquency causes/ or Runaways/ or Youth problems/ or "Adjustment (to environment)"/ or Coping/ or Life satisfaction/ or Happiness/ or Well being/ or Emotional adjustment/ or Social adjustment/ or Social isolation/ or Stress management/ or Stress variables/ or Daily living skills/ or Self esteem/ or Alienation/ or Cultural isolation/ or Student alienation/ or risk factor$.ti. or vulnerab$.ti. or resilien$.ti. or (factor$ adj protect$).ti. or protect$ factor$.ti. or factors associated.ti. or correlat$.ti. or predict$.ti. or predictors.ti. or determinant$.ti. or self esteem.ti. or self concept.ti. or coping.ti. or well being.ti. or social support.ti. or social support.ti. or empower.ti. or empower$.ti.

D. Search terms for physical activity:

Exp adapted physical education/ or exp health activities/ or exp physical activities/ or exp physical education/ or exp physical recreation programs/ or exp playground activities/ or exp recreational activities/ or exp exercise/ or exp health related fitness/ or exp physical fitness/ or exp physical fitness tests/ or exp physical health/ or exp athletics/ or exp extracurricular activities/ or exp physical activity level/ or exp leisure education

E. Search terms for healthy eating:

Exp breakfast programs/ or exp dietetics/ or exp eating habits/ or exp food/ or exp health/ or exp lunch programs/ or exp nutrition/ or exp nutrition instruction/ or exp “recipes (food)”/ or exp vending machines/ or exp obesity

F. Final result

A AND (B OR C) AND (D OR E)

Social Science Citation Index

Implemented via Web of Science for 1981 - September 2000.

A. Search terms for adolescents and young people:

(youth OR teenagers OR young people OR young adults OR adolescen*)

B. Search terms for health promotion and determinants of physical health or physical ill health:

(promot* OR increas* OR prevent* OR intervention* OR program* OR curriculum* OR educat* OR campaign* OR impact* OR effect* OR prevent* OR reduc* OR risk factor* OR factors associated OR correlat* OR predict* OR determinant* OR disadvantag* OR inequalities OR social class OR working class OR high risk OR depriv* OR gender OR low income OR ethnic OR disabilit*)

C. Search terms for healthy eating or physical activity

(eating OR nutrition* OR food OR diet* OR fat OR supermarket* OR cafeteria* OR canteen* OR cholesterol OR physical activity OR exercise OR leisure OR sport* OR fitness OR physical education OR recreation*)

D. Final result

A AND B AND C

CINAHL

Implemented via WebSpirs for 1982 - July 2000.

A. Search terms for adolescents and young people:

(young people in TI) OR (young people in AB) OR (young adult* in TI) OR (young adult* in AB) OR (youth in TI) OR (youth in AB) OR (youth in DE) OR (juvenile* in TI) OR (juvenile* in AB) OR (juvenile* in DE) OR (teenager* in TI) OR (teenager* in AB) OR (adolescent* in TI) OR (adolescent* in AB) OR (adolescent* in DE) OR (school student* in TI) OR (school student* in AB) OR (school student* in DE) OR (dropout* in TI) OR (dropout* in AB) OR (pupil* in TI) OR (pupil* in AB)

B. Search terms for health promotion / illness prevention:

(prevent* in TI) OR (prevent* in AB) OR (reduc* in TI) OR (reduc* in AB) OR (promot* in TI) OR (promot* in AB) OR (increase* in TI) OR (increase* in AB) OR (intervention* in TI) OR (intervention* in AB) OR (program* in TI) OR (program* in AB) OR (curriculum* in TI) OR (curriculum* in AB) OR (educat* in TI) OR (educat* in AB) OR (project* in TI) OR (project* in AB) OR (campaign* in TI) OR (campaign* in AB) OR (impact* in TI) OR (impact* in AB) OR (risk factor* in TI) OR (risk factor* in AB) OR (vulnerability in TI) OR (vulnerability in AB) OR (resilien* in TI) OR (resilien* in AB) OR (protect* in TI) OR (protect* in AB) OR (factors associated in TI) OR (factors associated in AB) OR (correlates in TI) OR (correlates in AB) OR (predict* in TI) OR (predict* in AB) OR (determinant* in TI) OR (determinant* in AB)

C. Search terms for health promotion and determinants of physical health or physical ill health:

(risk in TI) OR (risk in AB) OR (risk factors in TI) OR (risk factors in AB) OR (culture in TI) OR (culture in AB) OR (lifestyle in TI) OR (lifestyle in AB) OR (risk-taking in TI) OR (risk-taking in AB) OR (knowledge in TI) OR (knowledge in AB) OR (attitude* in TI) OR (attitude* in AB) OR (practice in TI) OR (practice in AB) OR (adolescent behavior in TI) OR (adolescent behavior in AB) OR (adolescent psychology in TI) OR (adolescent psychology in AB) OR (comparative study in TI) OR (comparative study in AB) OR (socioeconomic factors in TI) OR (socioeconomic factors in AB) OR (race relations in TI) OR (race relations in AB) OR (cultural deprivation in TI) OR (cultural deprivation in AB) OR (urban population in TI) OR (urban population in AB) OR (student dropouts in TI) OR (student dropouts in AB) OR (juvenile delinquency in TI) OR (juvenile delinquency in AB) OR (homeless youth in TI) OR (homeless youth in AB) OR (health promotion in TI) OR (health promotion in AB) OR (health education in TI) OR (health education in AB) OR (primary prevention in TI) OR (primary prevention in AB) OR (behavior modification in TI) OR (behavior modification in AB) OR (behavior therapy in TI) OR (behavior therapy in AB) OR (program evaluation in TI) OR (program evaluation in AB) OR (intervention studies in TI) OR (intervention studies in AB) OR (outcome-assessment-health-care in TI) OR (outcome-assessment-health-care in AB) OR (single parent in TI) OR (single parent in AB) OR (poverty in TI) OR (poverty in AB) OR (unemployment in TI) OR (unemployment in AB) OR (minority groups in TI) OR (minority groups in AB) OR (attitude to health in TI) OR (attitude to health in AB)

D. Search terms for physical activity:

(sports in TI) OR (sports in AB) OR (exercise in TI) OR (exercise in AB) OR (exertion in TI) OR (exertion in AB) OR (physical education and training in TI) OR (physical education and training in AB) OR (physical endurance in TI) OR (physical endurance in AB) OR (physical fitness in TI) OR (physical fitness in AB) OR (leisure activities in TI) OR (leisure activities in AB) OR (physical activity in TI) OR (physical activity in AB) OR (physical exercise in TI) OR

(physical exercise in AB) OR (physical inactivity in TI) OR (physical inactivity in AB)

E. Search terms for healthy eating:

(diet therapy in TI) OR (diet therapy in AB) OR (nutrition in TI) OR (nutrition in AB) OR (obesity in TI) OR (obesity in AB) OR (weight loss in TI) OR (weight loss in AB) OR (food preferences in TI) OR (food preferences in AB) OR (feeding behavior in TI) OR (feeding behavior in AB) OR (food habits in TI) OR (food habits in AB) OR (reducing diet in TI) OR (reducing diet in AB) OR (diet in TI) OR (diet in AB) OR (healthy eating in TI) OR (healthy eating in AB) OR (adolescent nutrition in DE) OR (diet surveys in DE) OR (diet records in TI) OR (diet records in AB) OR (health food in TI) OR (health food in AB) OR (diet fads in TI) OR (diet fads in AB) OR (nutrition surveys in DE) OR (nutrition assessment in TI) OR (nutrition assessment in AB)

F. Final result.

A AND (B OR C) AND (D OR E)

BiblioMap

#01 YOUNG PEOPLE
#02 HEALTHY EATING
#03 #1 AND #2
#04 #03 AND NOT PHYSICAL ACTIVITY
#05 ACTIVITY
#06 PHYSICAL ACTIVITY
#07 LEISURE
#08 #05 OR #06 OR #07
#09 #08 AND YOUNG PEOPLE

Final result

#10 #04 OR #09

The following earlier searches of Medline and EMBASE were carried out in 1995 and results held on BiblioMap

MEDLINE

A. Search terms for population

adolescence OR adolescent-behavior OR adolescent-health-services OR schools OR school-health-services OR students

B. Search terms for health promotion

attitude-to-health OR health-behavior OR health-education OR health-promotion OR knowledge-attitudes-practice OR life-style OR

patient-education OR primary-prevention OR risk-management OR risk-taking

C. Search terms for healthy eating

adolescent-nutrition OR diet-surveys OR diet-records OR diet-reducing OR feeding-behavior OR food-habits OR food-preferences OR nutrition-surveys

D. Search terms for physical activity

exercise OR leisure-activities OR physical-education-and-training OR physical-fitness OR recreation OR sports

E. Final result

A AND B AND (C OR D)

EMBASE

A. Search terms for population

adolescence (expl) OR adolescent (expl) OR child behavior (expl) OR college OR college student OR high school OR school (expl) OR school health service OR student OR university

B. Search terms for health promotion

behavior modification OR health behavior (expl) OR health education (expl) OR health promotion OR heart prevention OR infection prevention OR primary prevention OR risk management

C. Search terms for healthy eating

child nutrition OR body image OR eating habit OR feeding behavior OR weight reduction

D. Search terms for physical activity

breathing exercise OR dynamic exercise OR exercise tolerance OR fitness OR leisure OR physical activities (expl) OR physical education OR recreation

E. Final result

A AND B AND (C OR D)

HealthPromis

A. Search terms for healthy eating

General: healthy eating AND nutrition

B. Search terms for adolescents and young people

General: adolescents OR young people OR young adult OR children

Final result

A AND B

Health Promotion Library Scotland Catalogue

#01 General: healthy eating AND nutrition
#02 General: adolescents OR young people OR young adult OR children
#03 #01 AND #02
#04 General: exercise OR physical activity OR sport OR fitness OR leisure
#05 General: adolescent$
#06 #04 and #05

Final result

#03 OR #06

The Cochrane Library

Implemented via Cochrane Library Issue 3, 2000 (CD ROM)

Search terms for adolescents and young people:

#1 HOMELESS-YOUTH*:ME
#2 ADOLESCENCE:ME
#3. JUVENILE-DELINQUENCY*:ME
#4 YOUNG near PEOPLE
#5 YOUNG near ADULT*
#6 JUVENILE*
#7 TEENAGER*
#8 PUPIL*
#9 SCHOOL and STUDENT*
#10 YOUTH*
#11 ADOLESCENT*
#12 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11

Search terms for health promotion / illness prevention:

#13 PREVENT*
#14 REDUC*
#15 PROMOT*
#16 INCREASE*
#17 INTERVENTION*
#18 PROGRAM*
#19 CURRICULUM*
#20 EDUCAT*

#21 PROJECT*
#22 CAMPAIGN*
#23 IMPACT*
#24 RISK and FACTOR*
#25 VULNERABILITY
#26 RESILIEN*
#27 PROTECT*
#28 PREDICT*
#29 DETERMIN*

#30 #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29

Search terms for health promotion and determinants of physical health or physical ill health:

#31 RISK-FACTORS*:ME
#32 CULTURE*:ME
#33 RISK-TAKING*:ME
#34 KNOWLEDGE-ATTITUDES-PRACTICE*:ME
#35 ADOLESCENT-BEHAVIOR*:ME
#36 ADOLESCENT-PSYCHOLOGY*:ME
#37 CROSS-CULTURAL-COMPARISON*:ME
#38 COMPARATIVE STUDY*:ME
#39 SOCIOECONOMIC FACTORS*:ME
#40 RACE-RELATIONS*:ME
#41 CULTURAL-DEPRIVATION*:ME
#42 URBAN-POPULATION*:ME
#43 STUDENT-DROPOUTS*:ME

#44 JUVENILE-DELINQUENCY*:ME
#45 HOMELESS-YOUTH*:ME
#46 HEALTH-PROMOTION*:ME
#47 HEALTH-EDUCATION*:ME
#48 PRIMARY-PREVENTION*:ME
#49 BEHAVIOR-MODIFICATION*:ME
#50 BEHAVIOR-THERAPY*:ME
#51 PROGRAM-EVALUATION*:ME
#52 INTERVENTION-STUDIES*:ME
#53 OUTCOME-ASSESSMENT-HEALTH-CARE*:ME
#54 SINGLE-PARENT*:ME
#55 POVERTY*:ME
#56 UNEMPLOYMENT*:ME
#57 MINORITY and GROUPS*:ME
#58 ATTITUDE*:ME
#59 ATTITUDE TO HEALTH*:ME

#60 #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or #48 or #49 or #50 or #51 or #52 or #53 or #54 or #55 or #56 or #57 or #58 or #59

Search terms for physical activity:

#61 EXERCISE*:ME
#62 PHYSICAL-EDUCATION-AND-TRAINING*:ME
#63 PHYSICAL-FITNESS:ME
#64 PHYSICAL-ENDURANCE:ME
#65 LEISURE-ACTIVITIES*:ME
#66 SPORTS*:ME

Search terms for healthy eating:

#67 DIET*:ME
#68 DIET-SURVEYS:ME
#69 ADOLESCENT-NUTRITION*:ME
#70 OBESITY*:ME
#71 WEIGHT-LOSS*:ME
#72 WEIGHT-GAIN:ME
#73 FOOD-SERVICES*:ME
#74 FOOD-HABITS*:ME
#75 FOOD-PREFERENCES*:ME
#76 NUTRITION-ASSESSMENT*:ME
#77 NUTRITION*:ME

#78 #61 or #62 or #63 or #64 or #65 or #66
#79 #67 or #68 or #69 or #70 or #71 or #72 or #73 or #74 or #75 or #76 or #77
#80 #12 and (#30 or #63) and (#78 or #79)
#81 #46 or #47 or #48

Final result

#83 #80 and #81

HTA database

Nutrition /All fields AND young(w)people /All fields OR adolescent/All fields
OR
Nutrition/All fields OR healthy(w)eating/All fields AND promotion/All fields

APPENDIX B: Details of sound outcome evaluations: methodology

Author	Design	Number of conditions / Sample size	Follow-up interval	Participation rate/ Attrition	Authors' judgement about effects on physical activity outcomes	Reviewers' judgement about effect
Moon et al. (1999a)	CT	2 groups: (i) Wessex Healthy Schools Award (WHSA) (n=11) (ii) Control group (n=5)	Within three months of the end of the intervention	1 school dropped out of the intervention group	* Effective for reported behaviour for older young women (aged 15 to 16 years). Ineffective for males and younger women (12 to 13 years) * Ineffective for knowledge, but with most marked changes amongst year 11 students * Effective for health promotion organisation and functioning within schools, but ineffective for 'physical activities' and 'taking responsibility for oneself'	Agree with authors
Perry et al. (1987)	RCT	2 groups randomised by class Intervention group (6 classes, n= 173 students) Control group (4 classes, n=95 students)	Immediately after the intervention	Not reported	* Ineffective for behaviour (increased participation in physical activity) for both males and females * Effective for knowledge for young women only * Effective for intentions for young women only	Agree with authors
Walter I (1989) 'Know Your Body' programme (Bronx, New York)	RCT	2 groups randomised by school Intervention group (n=15 schools, n=1590 students) Control group (n=8 schools; n= 693 students)	5 year intervention with yearly outcome measurements	All schools remained in the evaluation 1036 students (66.3%) qualified for data analysis after 5 years	* Partially effective for clinical risk factors (cholesterol levels, blood pressure, dietary intake) * Effective for knowledge	Agree with authors

APPENDIX B: Details of sound outcome evaluations: methodology (cont'd)

Author	Design	Number of conditions / Sample size	Follow-up interval	Participation rate/ Attrition	Authors' judgement about effects on physical activity outcomes	Reviewers' judgement about effect
Walter II (1989) 'Know Your Body' programme (Westchester County, New York)	RCT	2 groups randomised by district Intervention group (n= 2 districts, n= 8 schools, n= 485 students) Control group (n= 2 districts, n= 7 schools, n= 620 students)	5 year intervention with yearly outcome measurements	All schools remained in the evaluation 733 pupils (80.5%) qualified for data analysis after 5 years	* Effective for clinical risk factors (cholesterol levels, blood pressure, dietary intake) * Effective for knowledge (significantly more effective for young women)	Disagree with authors

RCT = Randomised Controlled Trial
CT = Controlled trial (without randomisation to study groups)

APPENDIX C: Details of sound outcome evaluations: study characteristics

Author	Country	Population	Setting	Objectives	Providers	Programme Content
Moon *et al.* (1999a)	UK	Year 8 and year 11 pupils (aged 11-16 years)	Secondary schools in Wessex Region	Objective of the intervention: * To help schools become health promoting. Objective of study: * To evaluate the impact on levels of health promotion activity, organisation and functioning of participating schools, and all staff, and to determine the effects on pupils' health related knowledge, attitudes and behaviour	Teachers and key school staff, as well as all members of the school community ('holistic' approach)	The 'Wessex Healthy Schools Award' * The award scheme provides structured frameworks, health related targets and external support to help schools become health promoting. *The scheme covers 9 key areas: 1/ the curriculum; 2/ links with the wider community; 3/ a smoke-free school; 4/ healthy food choices; 5/ physical activity; 6/ responsibility for health; 7/ health promoting workplace; 8/ environment; and 9/ equal opportunities and access to health.
Perry *et al.* (1987)	USA	9th Grade (14-15 year old pupils)	Suburban high school	*To establish positive eating and physical activity patterns and behavioural goals *To decrease salt and saturated fat intake and increase intake of complex carbohydrates *To increase level of physical activity	Teachers administered the programme in general, with 30 class elected peer leaders leading the class based sessions	The 'Slice of Life' programme 10 session high school curriculum designed to promote health eating and physical activity patterns amongst young people. Intervention covered knowledge about benefits of fitness; characteristics of a heart healthy diet; social influences on eating and exercise habits, and issues to do with weight control. Environmental influences (e.g. provision of health food options in school canteen) were identified and strategies for improvement were presented to school personnel.

APPENDIX C: Details of sound outcome evaluations: study characteristics (cont'd)

Author	Country	Population	Setting	Objectives	Providers	Programme Content
Walter I and II (1989) N.B. separate evaluations of same intervention in two populations in New York (the Bronx and Westchester County)	USA	4th grade (Mean age 9 years at start) 5 year longitudinal cohort intervention	Elementary and junior high schools	* To favourably modify the population distributions of risk factors for CHD and cancer (hypercholesterolaemia, hypertension, exposure to cigarette smoke, obesity, and poor physical fitness) through changes in behavioural antecedents of the risk factors (diet, physical activity, use of cigarettes)	Teachers delivered the classroom component Health and education professionals conducted risk factor examination screening	The 'Know Your Body' program * Classroom component 2 hours a week of education on healthy eating, promotion of physical activity, and targeting of beliefs and attitudes around smoking * Parental involvement component Parents receive newsletters their children's activities; take part in food surveys and family exercise days, as well as evening seminars * Risk factor examination component Students' height, weight, skinfold thickness, blood pressure, post exercise pulse rate and cholesterol levels were measured and results fed back to them. Teachers discuss the results with the pupils in the classroom in terms of setting behavioural goals.

APPENDIX D: Details of studies of young people's views: methodology

Study	Quality criteria met*	Sampling (identification, selection and recruitment)	Data collection (instrument/ setting/ reliability/ validity)	Data analysis (approach/ reliability/ validity)	Participation (in research process, consent)
Balding *et al*. (1997)	B, C	*15 secondary schools and community colleges were used to identify young people (but no detail on how schools selected) *No details on how young people within these schools were selected and recruited into the study	*Self-completion questionnaire containing 38 questions with fixed response categories (unclear whether there were any open-ended questions) *Examples of questions not given but questions covered areas such as current methods of travel to school; how they would like to travel to school; feelings of safety/ vulnerability; and involvement in accidents *No details on where the questionnaires were completed or who/how they were administered. *No details provided on establishing reliability/validity	*Proportions of type of responses to questions presented. analysis focused on 8 sub-groups within the sample (e.g. the 'frustrated cyclist'; the 'reluctant pedestrian') *No details on ensuring reliability/validity of analysis	No details
Birtwistle and Brodie (1991)	A, B, C, D, E, F, G	*Six secondary schools were used to identify young people (schools selected through non random sampling to ensure sufficient variation in variables under investigation). Primary schools were also recruited, which reflected the nature of schools within the local authority. *Young people in year 9 and children in year 6 were selected. No details on how young people within this year group were selected or recruited into the study	*Data collected using a questionnaire comprising the Children's Attitude Towards Physical Activity (CAPTA) scale. Contained both open-ended and closed questions. *Questions included ranking of school subjects and objectives of PE in order of perceived importance; and attitude statements in the following areas: social growth; social continuation; health and fitness; vertigo; aesthetic; catharsis; ascetic. *Administered by teachers in a classroom setting *CAPTA said to have previously been tested for reliability and validity. Not stated for other parts of questionnaire	*Two way ANOVA of attitude by socio-economic status and sex *Statistical tests were employed to enhance validity and reliability (e.g. MANOVA, Box's M to test statistical assumptions)	No details

* Key
A. Does the study give an explicit account of theoretical framework and/ or include a literature review?
B. Did the report explicitly and clearly state the aims of the study?
C. Did the report adequately describe the context of the study?
D. Did the report provide clear details of the sample used and how the sample was recruited?
E. Did the report provide a clear description of the methods used in the study including methods used to collect data and methods of data analysis?
F. Are there attempts made to establish the reliability and/or validity of the data analysis?
G. Were sufficient original data included to mediate between data and interpretation?

APPENDIX D: Details of studies of young people's views: methodology (cont'd)

Study	Quality criteria met*	Sampling (identification, selection and recruitment)	Data collection (instrument/ setting/ reliability/ validity)	Data analysis (approach/ reliability/ validity)	Participation (in research process, consent)
Coakley and White (1992)	A, B, C, D, E, F, G	*Young people identified through teachers and sports programme organizers (no details on how these people were selected) *No details on how teachers and programme organizers selected or recruited young people	*Individual interviews, tape-recorded, lasting 45 to 60 mins *Questions covered: sports background; leisure activities; making decisions about sport involvement; dynamics of staying involved; role of friends, family members, school, and work *Researchers conducted interviews but no details on where they were conducted *Strategies implemented to ensure young people felt comfortable and answered honestly	*Analysis aimed to identify patterns in responses and examine factors such as age, gender, social class and ethnicity *Two researchers analysed the data	*Author took steps to minimize power relations between young people and researcher.
Gentle *et al*. (1994)	B, C, E, G	*Two secondary schools selected to identify young people (no details given on how schools were selected) *Questionnaires distributed to all 'fourth years' (aged 14 to 15 years) in the schools	*Self-completion questionnaire containing closed questions (yes/no or measured on a 5 point likert scale) *No examples of questions given but they covered eight areas: perceptions of level of exercise and fitness; beliefs about value exercise; importance of reasons for exercising; enjoyment of competitive exercise; sources of encouragement to exercise; opportunities for exercise; smoking and drinking; and involvement in encouraging others to exercise *Completed in school setting but no detail given on who administered questionnaire *No details on reliability/validity	*Responses analysed according to differences in gender and levels of exercise * No details on ensuring reliability/validity of analysis	No details

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APPENDIX D: Details of studies of young people's views: methodology (cont'd)

Study	Quality criteria met*	Sampling (identification, selection and recruitment)	Data collection (instrument/ setting/ reliability/ validity)	Data analysis (approach/ reliability/ validity)	Participation (in research process, consent)
Harris (1993)	A, B, C, E, F	*Two schools selected to identify young people (no details of how schools were selected) *Equal numbers boys and girls selected using random numbers applied to alphabetically ordered year lists	*14 focus group interviews (most mixed, some single sex) of three to six participants *Examples of questions: what do you think a fit person looks like and how do they feel? what comes into your mind when you think of the word 'health'? *Author carried out group interviews in school *No details on reliability/validity *No mention of confidentiality	*Thematic areas covered by interviews prompt sheets appear to have been used for analysis *Content analysis used to compare and contrast data to identify patterns and themes *Researchers thinking processes documented throughout analysis	No details
Hopwood and Carrington (1994)	A, B, C, E, G	*Two schools selected to identify young people (no details of how these schools were selected) *No details of how young people were selected or recruited within these schools	*Questionnaire containing both open and closed ended questions (5 point agreement Likert scale for statements) covering the following areas: attitudes towards competition; perceived status of PE; physical activity self-esteem; gender stereotyping *Examples of questions: Would you like to be remembered for being a sports star? What would you do with an extra hour in school?; list of physical activities - which are for boys girls equally/ girls only/ boys only? *Completed during lesson time. Introductory briefing given *Personal and institutional autonomy guaranteed *No details on reliability/validity	*Descriptive statistics (frequencies and proportions) and inferential statistics (t-tests) *Author's note: only some of analyses presented in paper * No details on ensuring reliability/validity of analysis	No details

* Key
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APPENDIX D: Details of studies of young people's views: methodology (cont'd)

Study	Quality criteria met*	Sampling (identification, selection and recruitment)	Data collection (instrument/ setting/ reliability/ validity)	Data analysis (approach/ reliability/ validity)	Participation (in research process, consent)
Kincey *et al*. (1993)	B, C, E, G	*6 schools recruited via School Sports Co-ordinator. Selected on the basis of being broadly representative of the resident population *Schools were selected to include two schools from each of the three health districts within Manchester *All classes within year 10 for each of the schools were included within the study	*Self completion questionnaire, with both open and closed ended questions *Questions covered the following areas: motivations and barriers (e.g. 'I do not like any energetic activity'); self esteem (e.g. 'I often wish I was someone else'): reasons for participation and non-participation; sports preferences *Questionnaires administered by teachers in classroom setting *There was an assurance that responses would remain anonymous *Authors stated that self-esteem section (based on the Coopersmith Self-Esteem Scale) has been validated, but not clear how the rest of the questionnaire was validated	*Descriptive statistics (frequencies and proportions) and inferential statistics (strength of association between variables) *No mention made about how responses to open ended questions were categorized * No details on ensuring reliability/validity of analysis	No details
Mason (1995)	B	*Schools selected via local authorities to achieve control over socio-economic mix of sample (details unclear) *Interviewers used quota sampling to select households and young people in areas near selected schools. Quotas for age, sex and keenness on sport.	*Individual interviews conducted with young people, children and teachers (latter not detailed here) *Interview topic guides presented as appendices to report. *Examples of questions given: describe a time doing sport when you really felt good/bad, what sort of things put you off; why do you do these sports, what do you get out of it? what are benefits? what would encourage you to do more? what do you think of sports facilities for children in this area? what do your friends think about sport? which [sports people] do you admire, why? *Trained interviewers carried out interviews in young people's homes *Interviewers encouraged to try to interview young people alone. No further details relevant to data collection reliability/validity *Strict confidentiality was assured	*Approach unclear - thematic areas covered by interview prompt sheets differ from thematic presentation of results *Transcripts of interviews read for main themes and issues	*Consent requested on behalf of young people from their parents

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APPENDIX D: Details of studies of young people's views: methodology (cont'd)

Study	Quality criteria met*	Sampling (identification, selection and recruitment)	Data collection (instrument/ setting/ reliability/ validity)	Data analysis (approach/ reliability/ validity)	Participation (in research process, consent)
Miller (1993)	B, C,	*Two secondary schools in one town used to identify participants *Young women who reported that they were active in sports or dance selected to take part *No details on recruitment procedures	*Eleven group interviews (dance only, sport only, or both) of four to six participants *No detail on questions asked given *Author carried out group interviews in school *No details on reliability/validity	No details	*Participants gave their consent for group interviews to be tape-recorded.
Mitchell (1996)	A, B, C, D, E	*One secondary school selected out of five (first to agree to participate in study) *All year 10 girls asked to participate in study	*Four focus groups of three to seven participants in 'friendship groups' *No detail on which and how questions asked but following areas covered: the role played by magazines among the young women; their attitudes to articles on physical activity and other types of articles; frequency of participation in sport or exercise, factors affecting participation and attitudes towards different types of physical activity *Author carried out the focus groups *No details of validity /reliability	*Transcripts analysed for similarities and differences using framework developed before data collection * No details on ensuring reliability/validity of analysis	No details
Mulvihill *et al.* (2000a)	A, B, C, D E, G	*Researchers first chose sites and then selected young people within these sites in schools, shopping malls and youth and sports clubs *Sample purposively selected to reflect diversity in terms of socio-economic background, ethnicity and levels of physical activity/inactivity *In schools, researchers and	*10 focus groups in school settings, 4 focus groups in out-of-school setting, "ad hoc" interviews *Topic guides used for focus groups covered areas set out in study aims. Focus group schedule given in full by authors *Focus groups 45-60 minutes long, tape-recorded *Confidentiality assured *Focus group schedule piloted with two groups of young people and minor amendments made.	*Data analysed thematically according to main aims/ objectives of the study *Written record of key points from each interview produced using standard pro-forma based on topic guide *Tapes reviewed to clarify particular points	*Two groups of young people involved in pilot of the topic guide for focus groups, and changes made *Participants informed of their right to withdraw from study at any time *Authors describe how aim of interviews was to allow young people to

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APPENDIX D: Details of studies of young people's views: methodology (cont'd)

Study	Quality criteria met*	Sampling (identification, selection and recruitment)	Data collection (instrument/ setting/ reliability/ validity)	Data analysis (approach/ reliability/ validity)	Participation (in research process, consent)
Mulvihill *et al.* (2000a) *(cont'd)*		teachers recruited using criteria for physically active/ inactive pupils		*No details on ensuring reliability/validity of analysis	"Exert an influence over the choice of issues that were talked about and their relevance to the individual"
Orme (1991)	B, C	*Two secondary schools selected in Avon (no details on how schools were selected) *No details of how the ten 14 year old women were selected and recruited into the study.	*Semi-structured group interviews *No details on the questions asked *No details on who conducted the interviews or in which setting they took place *No details of validity /reliability	No details	No details
Rogers *et al.* (1997)	B, C, D, E, G	• 20 schools Camden and Islington Boroughs in London approached: 18 (90%) agreed to take part • Young people and their parents invited to take part. Two reminder letters were sent backed up with telephone calls * Random sample was drawn, stratified to represent young people from each of the four ethnic groups, with an equal number of boys and girls	• Taped recorded semi structured interviews were conducted, with translators used when necessary. • Majority of interviews with young people took place at school, with parents interviewed at home • Interview schedules had previously been piloted	• Data from closed ended questions was analysed using the SPSS statistical program. The Chi-squared significance test for significance was used to examine differences between various subgroups * No information provided on how data from open ended questions were analysed	* Active consent was sought from both parents and young people.

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F. Are there attempts made to establish the reliability and/or validity of the data analysis?
G. Were sufficient original data included to mediate between data and interpretation?

APPENDIX D: Details of studies of young people's views: methodology (cont'd)

Study	Quality criteria met*	Sampling (identification, selection and recruitment)	Data collection (instrument/ setting/ reliability/ validity)	Data analysis (approach/ reliability/ validity)	Participation (in research process, consent)
Sports Council Wales I (1994)	A, B, C, E, G	*Sampling frame of 228 schools used, stratified in terms of region and size of school *Number of classes selected within each selected school so as to reflect importance of that year in terms of overall school population *No details of how pupils selected from within school classes	*Self-completion questionnaire featuring closed and open questions *Questionnaire presented as appendices to report *Example of questions given: how much do you like doing PE in school (like it a lot/I, neither like or dislike it/ don't like it very much/ don't like it at all/ don't know); how much do you enjoy doing games in school? Still thinking about PE and games, do you prefer doing one more than the other? (yes, prefer games/ yes prefer PE/ no I like them about the same); why do you say that? Are there any reasons why you don't do very much sport or physical activity? *Questionnaires administered by researchers within schools *Questionnaire used and described in previous published survey by same funding body – no further details relevant to data collection reliability/validity *Complete confidentiality assured, sealable envelopes provided for completed questionnaires	*Descriptive statistics – simple frequencies of response by gender, year for fixed response questions *No detail of how open ended question responses were analysed	*Consent requested on behalf of young people from their parents "where required"

* Key
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C. Did the report adequately describe the context of the study?
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F. Are there attempts made to establish the reliability and/or validity of the data analysis?
G. Were sufficient original data included to mediate between data and interpretation?

APPENDIX D: Details of studies of young people's views: methodology (cont'd)

Study	Quality criteria met*	Sampling (identification, selection and recruitment)	Data collection (instrument/ setting/ reliability/ validity)	Data analysis (approach/ reliability/ validity)	Participation (in research process, consent)
Sports Council Wales II (1994)	A, B, C, D, G	*Young people who responded to questionnaire used for SCWI (1994) survey were invited to volunteer for additional interviews *Respondents selected from three towns covered by the earlier survey. No further detail as to how interviewees were selected from those volunteering *To identify larger proportion of young people less committed to sport, interviewees also selected by further snowball sample that built on researchers' networks in two towns	*In-depth, individual interviews *No detail of interview themes or examples of questions asked *University research team conducted interviews at young peoples' homes, sometimes in presence of parents *Interviewers had considerable experience of working with young people. No further details relevant to data collection reliability/validity *No mention of assurance about confidentiality	*Unclear - direct quotations were grouped under thematic headings	*Unclear whether consent obtained for interviews *Interviews tape recorded with participants' permission
Warburton (1998)	Did not meet any of the criteria	*Two secondary schools in Greater Manchester, one selected because author was the school nurse, other selected because author was unknown to the pupils *No details of how young people were selected and recruited within schools given.	*Focus groups *No other details given	No details	No details

* Key
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B. Did the report explicitly and clearly state the aims of the study?
C. Did the report adequately describe the context of the study?
D. Did the report provide clear details of the sample used and how the sample was recruited?
E. Did the report provide a clear description of the methods used in the study including methods used to collect data and methods of data analysis?
F. Are there attempts made to establish the reliability and/or validity of the data analysis?
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APPENDIX E: Details of studies of young people's views: study characteristics

Study	Aims and objectives	Sample characteristics	Key findings reported by authors	Reviewers' conclusions on young people's views
Balding *et al*. (1997)	*To examine the travel patterns and aspirations of young people on the home to school journey *To inform ways of reducing the number of cars taking young people to school.	**Location**: Secondary schools and community colleges in Avon **Sample number**: 3447 **Age range**: 11 to 15 years **Gender**: Mixed sex **Class**: Not stated **Ethnicity**: Not stated **Other information**: None **Exclusions**: No details	*13% of young people who did not currently cycle to school said that they would like to (23% of 11 to 12 year old boys) *39% of car travellers would prefer to travel by some other means (including 25% who would prefer to walk or cycle)	**Perceptions of/meaning of physical activity** Not addressed by study **Barriers** *Parental constraint on walking to school *Lack of facilities for leaving bicycles at school **Facilitators** *The creation of more cycle lanes
Birtwistle and Brodie (1991)	*To investigate the perceptions of PE held by UK school children in both primary and secondary phases of education and the socio-demographic variables that might influence children's feelings about activity and the reasons for being active	**Location**: UK **Sample number**: 607 **Age range**: 7 to 14 years **Gender**: 293 females 324 males (sic) **Class**: middle class/working class **Ethnicity**: Not stated **Other information**: pupils from literacy sets 1 to 4 were included, around 25% in each set **Exclusions**: None	*Open-ended responses to 'what are the objectives of PE' (*secondary school students*) were classed and ranked as fitness, enjoyment, recreation (having a break), skills in sport and other (friends and social interactions). Fitness was the first choice objective for 75% of respondents. For *primary school students* objectives were similarly ranked. * Physical education ranked within the top three school subjects in terms of perceived importance for both the primary and secondary pupils * Females had more positive attitudes overall *Secondary pupils in higher academic ability sets for literacy had more positive attitudes * Differences in attitudes between the socio-economic groups were generally non significant	**Perceptions of/meaning of physical activity** *What young people see as main objectives of PE *Attitudes to physical activity differed according to gender and academic ability set *Young people see PE as an important part of the curriculum (with secondary school pupils ranking it as slightly less important than primary school pupils) **Barriers**: Not directly addressed by study **Facilitators**: Not directly addressed by study

APPENDIX E: Details of studies of young people's views: study characteristics (cont'd)

Study	Aims and objectives	Sample characteristics	Key findings reported by authors	Reviewers' conclusions on young people's views
Coakley and White (1992)	*To explore how young people make decisions about participating or not participating in sport	**Location**: Industrial area of South East London **Sample number**: 60 **Age range**: 13 to 23 years **Gender**: 26 female; 34 male **Class**: 75% from working class families **Ethnicity**: 85% described as 'native Britons'; 15% other ethnic backgrounds **Other information**: Included both active and inactive young people **Exclusions**: None stated	*Decisions about sports participation related to 1. concerns about the transition to adulthood 2. concerns about personal competence and autonomy (e.g. chance to display skills) 3. constraints related to money, parents and opposite sex friends 4. support and encouragement from significant others; and 5. past experiences in school sports and physical education classes. *As gender is a key factor within these themes, authors recommend a greater appreciation by teachers, coaches and leisure providers of ways in which gender relations operate to restrict female choices	**Perceptions of/meaning of physical activity** *Young people's understandings of sport must be seen in the context of transitions to adulthood *Taking part in sport is not seen as consistent with 'becoming a woman' *Strong association of sport with masculinity *For women, sport defined in a very narrow way (competitive, has winners and losers; formal commitment etc). With this definition, women did not see themselves as 'sports people' even if they were very active. **Barriers** *Physical activities which are associated with childhood or primary school; or are highly structured and organized by adults (particularly for young women) *Feelings of not been very good at sports or not 'good enough'; fear of negative peer evaluation. *Cost of activity, equipment and transportation. *Parental constraint on leisure time (especially for ~~girls~~young women) *Boyfriends ~~becoming a priority~~making decisions (young women) *Negative experiences of school PE (for young women) in terms of the rules and arrangements relating to gym kits, shower and changing facilities **Facilitators** *Personal competence – giving a chance to use or show-off skills *Parental support for 13 to 16 year olds *Social support from friends (especially young women) *Choice of 'not-traditional' physical activities and mixed sex activities in PE (for young women) *For young men current participation in sport was partly a result of positive PE experiences at school

APPENDIX E: Details of studies of young people's views: study characteristics (cont'd)

	Aims and objectives	Sample characteristics	Key findings reported by authors	Reviewers' conclusions on young people's views
Gentle *et al*. (1994)	*To investigate factors associated with the motivations to exercise *To work out ways to encourage young people to participate in physical activity, especially those with lower activity levels	**Location**: Young people from two secondary schools in two market towns in Devon **Sample number**: 426 (Note exclusions below) **Age range**: 14-15 years **Gender**: 197 male; 185 female (sic) **Class**: Not stated **Ethnicity**: Not stated **Other information**: Exercise level (based on mean number of activities carried out at least twice a week): low (n=98); medium-low (n=97); medium high (n=90); high (n=97) **Exclusions**: Those who did not complete questionnaire correctly (n=44); those who were absent from school (reported to be only a small number).	*Majority of young people reported positive beliefs about the value of exercise for their health *The most encouragement for exercise was received from school. *Low exercisers reported less encouragement (in particular from out of school sports clubs) *Low exercisers had less positive beliefs about social benefits of exercise *Girls of all activity levels and low exercising boys reported dislike for competitive exercise; *Less than half the low exercisers thought they had good opportunities for exercise *Initiatives need to take account motivational differences according to gender and physical activity level	**Perceptions of/meaning of physical activity** *Beliefs about benefits of exercise (see key findings reported by authors) *Most and least sources of encouragement for physical activity (see key findings reported by authors) *Differences according to activity level (see key findings reported by authors) *Emphasis on value of exercise in terms of strength for boys and losing weight for girls **Barriers** Not directly addressed by study **Facilitators** Not directly addressed by study

APPENDIX E: Details of studies of young people's views: study characteristics (cont'd)

	Aims and objectives	Sample characteristics	Key findings reported by authors	Reviewers' conclusions on young people's views
Harris (1993)	*To explore young people's attitudes, views and beliefs with respect to health, fitness and exercise *To explore whether perceptions varied on the basis of age and gender	**Location**: Two large comprehensive schools in Staffordshire and Wiltshire **Sample number**: 61 **Age range**: 11 and 13 years **Gender**: Mixed sex **Class**: Not stated - aim was for a mix of socio-economic backgrounds **Ethnicity**: Not stated **Other information**: None **Exclusions**: No details	*Young people have a limited understanding about health, fitness and exercise *Young people have a limited bio-medical view of health which excludes social and psychological dimensions *Fitness is viewed as a negative concept associated with uncomfortable physical exertion and high levels of performance	**Perceptions of/meaning of physical activity** *Young people felt that being unhealthy was to do with being fat, eating too much of the wrong food, smoking, not being good at sport, being lazy and drinking too much. Fitness was mainly about being good at sport and being thin *Most young people considered themselves to be quite fit and evaluations of own fitness were relative: young people compared themselves to their peers **Barriers** Not addressed by study **Facilitators** Greater consensus about desirable health behaviours was considered potentially helpful
Hopwood and Carrington (1994)	*To investigate boys' and girls' attitudes to PE. *To investigate claims that girls' attitudes to PE might be becoming more positive, and look at girls' perceptions of their femininity in relation to sport participation	**Location**: Two urban high schools in North of England **Sample number**: 280 **Age range**: 11, 13, 15 years **Gender**: Mixed **Class**: not stated **Ethnicity**: sample from "all white" schools **Other information**: authors aimed for range in educational ability **Exclusions**: none	*Young women felt confident about their PE abilities and questioned gender stereotyped statements (e.g. 'boys have much more 'natural ability' in PE') *Young women placed low value on competition and winning *Team and individual sports favoured equally (both sexes) *No difference seen between the sexes in perceived importance of PE *Young women less interested than males in being remembered for being sports star *Most physical activities described as for boys and girls equally (exceptions rugby, netball, cricket, football and basketball)	**Perceptions of/meaning of physical activity** *See key findings as reported by author *Young men tended to respond 'unsure' rather than 'disagree' or 'agree' to gender stereotyped statements **Barriers** Not directly addressed by study **Facilitators** Not directly addressed by study

APPENDIX E: Details of studies of young people's views: study characteristics (cont'd)

	Aims and objectives	Sample characteristics	Key findings reported by authors	Reviewers' conclusions on young people's views
Kincey *et al*. (1993)	*To examine the interrelationships between: self-esteem, motivation for and barriers to sports and exercise participation	**Location**: Schools within three health authority districts in Manchester **Sample number**: 485 **Age range**: 14-15 years **Gender**: Mixed **Class**: Not stated **Ethnicity**: Health Authority districts were judged to reflect a range of ethnic and cultural groups **Other information**: None **Exclusions**: No details but response rate of 81%	*73% felt that keeping fit was important to them **Barriers** 31% specified lack of time; 23% felt not good enough, 22% lack of confidence; 18% lack of money **Motivators** **social motivators:* 87% like being part of a team, 85% find exercise fun, 55% fell exercise helps them make friends, 14% dislike team sports **psychological motivators:* 80% said exercise helps them forget troubles, 70% feel good afterwards, 69% find it increases confidence, 23% use exercise to relieve stress. **reasons for participation in sport:* 62% specified enjoyment; 25% health and fitness; 4% confidence; 4% relationships; 3% relaxation; 2% nothing better to do *Positive self esteem associated with higher motivation. High self esteem negatively correlated with number of barriers. Lower motivation associated with larger number of barriers to participation.	**Perceptions of/meaning of physical activity** *The majority of young people consider keeping fit to be important; believe that exercise increased confidence and helped them to feel good *Most popular sports were badminton, tennis, swimming, football and basketball. **Barriers** *Agree with authors (see key findings as reported by authors) **Faciliatators** *Agree with authors (see 'Motivators' under key findings as reported by authors)
Mason (1995)	*To complement a national survey of sports participation rates *To expore young people's views on participation in more detail *To investigate the "school effect"and other factors which affect participation	**Location**: England-wide **Sample number**: 23 young people (children and PE teachers also interviewed) **Age range**: sample of young people aged 11 - 15 **Gender**: Mixed sex **Class**: Not stated - aim was for a mix of socio-economic backgrounds **Ethnicity**: Not stated **Other information**: None **Exclusions**: No details	*Authors do not highlight main findings but instead use a chapter of their report to illustrate the breadth of young people, children's and parents' views on sport	**Perceptions of/meaning of physical activity** Not addressed by study **Barriers** *Complex rules for some school games/ having to play before learning rules/ playing outside during bad weather *Negative reactions from peers over performance in /choice of physical activity *Criticism from PE teachers **Facilitators** *Encouragement from peers *having respect for PE teachers

APPENDIX E: Details of studies of young people's views: study characteristics (cont'd)

	Aims and objectives	Sample characteristics	Key findings reported by authors	Reviewers' conclusions on young people's views
Miller (1993)	*To assess the extent of conflicts or ambiguities between perceptions of femininity and a commitment to an active lifestyle *To assess differences in relation to the above according to dance and sports	**Location:** Two schools in one town in Sussex **Sample number:** between 44 and 66 **Age range**: Not stated **Gender**: Female **Class:** Not stated **Ethnicity**: Not stated **Other information**: All participants physically active in either sports or dance **Exclusions:** No details	*Young women identities as physically active often did not fit in with conventional notions of femininity *This illustrated through lack of female sporting role models; lack of support for active lifestyles from female friends within school; prejudiced attitudes of boys; inability of teachers to cope adequately and conventional notions of feminine physique *Strategies deployed to balance mis-match – seeking 'sporty' friends outside of school; relying on support from families; trying to ensure muscles are not too well-developed	**Perceptions of/meaning of physical activity** *Agree with authors findings re: incompatibility of conventional notions of femininity with being physically active
Mitchell (1996)	*To explore the role of teenage magazines in shaping attitudes to physical activity amongst young women *To explore the potential for using teenage magazines to promote physical activity	**Location**: Secondary school in South East London **Sample number**: 21 **Age range**: 14 to 15 years **Gender**: Female **Class**: School described as located in a "relatively poor area" **Ethnicity**: Breakdown according to school overall: 41% 'White'; 24% 'Black'; 25% other ethnic groups **Other information**: Academic record of school below average **Exclusions**: Those participating in school musical; sample restricted to those who formed the first four focus groups.	**Barriers** *Barriers to participation: conflicting interests/lack of time; lack of motivation **Other** *Low participation rate in organized sports *Teenage magazines play a central role in young women's lives *Feasible and acceptable to promote physical activity in teenage magazines	**Perceptions of/meaning of physical activity** *Preference for cycling, swimming aerobics *Feeling fit, toned/getting a better figure; maintaining health, acquiring new skills and building confidence are the perceived benefits of exercise. * Young women noted that physical activity does not fit with usual content of magazines ("girlie stuff"). **Barriers** *Agree with authors **Facilitators** *Using magazines to promote physical activity (the young women had a preference for articles about readers engaging in sport rather than specific instructions for exercise)

APPENDIX E: Details of studies of young people's views: study characteristics (cont'd)

	Aims and objectives	Sample characteristics	Key findings reported by authors	Reviewers' conclusions on young people's views
Mulvihill *et al*. (2000a)	to explore: *what constitutes physical activity / beliefs about physical activity *preferred activities (physical & non-physical) *relationships between physical activity and other health behaviours *role of friends and gender differences in perception and participation *the role of parents and the school *barriers and motivations *ways of overcoming barriers and ideas for promoting greater involvement	**Location**: schools, shopping malls and youth clubs in urban and rural sites in North, Midlands and South UK **Sample number**: 96 **Age range**: 11-15 years **Gender**: Mixed **Class**: Authors use definition of 35% free school meals = poor area. The six sites had proportions of 49%, 33%, 32%, 16%, 16% and 5%. **Ethnicity**: authors state they aimed to recruit diverse group in terms of ethnicity **Other information**: School-based sample (n=61) made up of 43 inactive and 18 active young people **Exclusions**: none	*High level awareness about benefits of physical activity; *Social aspects important, group activities reduce focus on effort and increase enjoyment; *Strong, negative opinions of PE teachers (among females) - teachers insensitive, do not take them seriously; *Young women felt embarrassed/ intimidated around their male peers when active; *Young men uninterested in mixed-sex activities because of girls' standards of participation; *__Inhibiting factors__ - feeling embarrassed/ self-conscious about body /awareness of image among peers (female), feelings of inertia, preference for other activities, lack of time (homework), expense, no late buses (rural areas), no consultation and choice (school PE); *__Motivating factors__ if currently inactive - feelings of well-being, enjoyment, avoiding boredom, help with losing weight (female); *__Motivating factors__ if already active - social benefits/ making friends, competitiveness, being part of team, increased confidence, sense of achievement; *__Suggestions for supporting physical activity__ - making activities more affordable, young people having more input in choosing school activities; increasing access to clubs for young people to dance; youth clubs to run single sex physical activity sessions, with mixed sex activities afterwards; physical activity should be encouraged by emphasizing the fun and social aspects; young people felt there was enough literature on availability of physical activity	**Perceptions of/meaning of physical activity** *Agree with authors' findings about benefits and social aspects of physical activity; opinions of PE teachers and gender differences (see key findings reported by authors) *Parents did not play a big role in supporting/encouraging physical activity *Physical activity perceived as vigorous activities (e.g. running) rather than moderate (e.g. walking) *Young men engaged in physical activities during breaks at school, young women preferred to chat with friends (but some felt young men monopolized facilities) **Barriers** *Agree with authors' findings described under inhibiting factors, since this was asked of young people directly. *For young people who wanted to cycle to school, lack of storage, heavy bags/equipment was a problem *Attitudes/ behaviour of PE teachers. **Facilitators** * Agree with authors' findings described under motivating factors, since this was asked of young people directly. *See young people's suggestions (left) for supporting physical activity

APPENDIX E: Details of studies of young people's views: study characteristics (cont'd)

	Aims and objectives	Sample characteristics	Key findings reported by authors	Reviewers' conclusions on young people's views
Orme (1991)	*To identify the influences and constraints on participation in physical activity amongst 14 year old girls.	**Location**: Two secondary schools in Avon **Sample number**: 10 **Age range**: 14 years **Gender**: Female **Class**: Not stated **Ethnicity**: Not stated **Other information**: None **Exclusions**: No details	*Traditional sports offered at school seen as boring (by those less active); girls would welcome more choice and chance for more involvement in 'boys activities'. *Physical activity perceived as valuable in terms of body shape and weight rather than fitness. *Self-consciousness about bodies and personal appearance incompatible with physical activity. *Physical activity was not part of young women's leisure time *'PE 'environment' (e.g. showers, PE kit) was problematic *Benefits did not outweigh the negative aspects of taking part (seen as inconvenience, discomfort, or feelings of failure/ embarrassment). *Those who are pro-exercise but anti-participation could be encouraged by combining sports and leisure facilities	**Perceptions of/meaning of physical activity** *Agree with author (traditional sports seen as boring; value of physical activity; physical activity not part of leisure time) **Barriers** *Current PE environment *Taking pride in personal appearance *Self-consciousness about bodies *Feelings of discomfort during physical activity *Feelings of embarrassment and failure **Facilitators** *More choice of activities in PE *Combining sports and leisure facilities to use 'socialising' as an incentive to participate
Rogers *et al.* (1997)	* To examine in detail the effects of ethnicity on the health behaviours, knowledge and attitudes of young people from different ethnic groups	**Location**: Camden and Islington, London **Sample number**: 373 approached, 158 consented to participate **Age range**: 12 years **Gender**: 50% boys, 50% girls **Class**: included a substantial minority of Bangladeshi and Black African low income families **Ethnicity**: 25.8% Bangladeshi, 25.3% Black African, 17% Black Caribbean 31.6% White **Other information**: 98 were parents were interviewed **Exclusions**:	* Four (19%) of Bangladeshi boys said their parents did not like them going out after school due to worries about bullying. *Four (20%) of Bangladeshi girls cited family disapproval, immodesty of sports clothes, communal nature of sporting activities as reasons for not exercising * Girls significantly less likely to exercise outside school. Girls who did exercise did so less frequently than boys * Bangladeshi girls and boys were least likely to take exercise outside school. * More girls than boys exercised outside school to alter or maintain their body shape * Twice as many boys as girls reported exercising outside school because they 'just like to'	**Perceptions of/meaning of physical activity** Not addressed by study **Barriers** * Not having enough time * Safety concerns (racial harassment) * Cultural beliefs about sports clothing and inappropriate changing facilities * Cultural practices and expectations (having to help out in the home) **Facilitators** * None specified

APPENDIX E: Details of studies of young people's views: study characteristics (cont'd)

	Aims and objectives	Sample characteristics	Key findings reported by authors	Reviewers' conclusions on young people's views
Sports Council Wales I (1994)	*To obtain information on involvement of secondary school children in curricular PE, extracurricular sport and sport in the community *To investigate issues of availability of opportunities, access to facilities, attitudes towards sport and influences on decisions to participate	**Location**: All counties in Wales **Sample number**: 2873 **Age range**: 11 - 16 **Gender**: Mixed sex **Class**: Not stated **Ethnicity**: Not stated **Other information**: None **Exclusions**: No details	*Reported participation rates for range of curriculum, extracurricular and community sports/activities *Ranking of physical activities young people would like to do and measures of unmet demand - swimming (all sample) and rugby and football (young women) most popular of unavailable activities *Preference for PE or games? *Club membership *Degree of liking for compulsory curriculum PE	**Perceptions of/meaning of physical activity** *60% sample liked PE "a little", 20% "a lot" *50% stated preference for games over PE; 15% preferred PE to games **Barriers** Respondents who identified themselves as doing little or no sport were asked for reasons why but no data presented **Facilitators** Not addressed by study
Sports Council Wales II (1994)	*To examine young people's feelings to and attitude about sport *To establish some of the meanings young people give to sporting activity and how they view their own involvement and the involvement of others	**Location**: Pontypool, Haverfordwest, Wrexham, Swansea and Maesteg, Wales **Sample number**: 60 **Age range**: 11 - 16 **Gender**: Mixed sex **Class**: Not stated **Ethnicity**: None of participants came from ethnic minority groups. Minority were Welsh speaking **Other information**: Sample over represented young women and aimed to include those less committed to sport **Exclusions**: No details	*Young people tend to operate with a restricted definition of the word 'sport' where it is taken to mean organised, rule governed and competitive activity *Pleasures associated with sport differ depending on degree to which it is perceived as recreational - work ethic prevalent *Egalitarian views widespread among young people as regards own and peers' participation but tendency to revert to gender stereotypes when discussing adult participation *Body image important for participation, especially for young women	**Perceptions of/meaning of physical activity** *distinction between organised, competitive 'real' sport and 'recreational sport for leisure' **Barriers** *PE teachers' favoritism of young people who do well at sport *Young women's embarrassment over their physical appearance *Bad weather problem for team games **Facilitators** *More encouragement at sports clubs for "non sporty people" / extracurricular teams particularly for those who are less able *Making sport more fun *Provision of more sport at the County level for young women

APPENDIX E: Details of studies of young people's views: study characteristics (cont'd)

	Aims and objectives	Sample characteristics	Key findings reported by authors	Reviewers' conclusions on young people's views
Warburton (1998)	*To inform the development of an intervention to promote participation in physical activity NB: this was not explicitly stated by the author but inferred by the reviewers	**Location**: Two secondary schools in Greater Manchester **Sample number**: Not stated **Age range**: 14 to 15 years **Gender**: Mixed sex **Class**: Not stated **Ethnicity**: Not stated **Other information**: None **Exclusions**: None given	*Activities on offer at school only acceptable to those who are 'sporty'. *Young women found aerobics to be an "exciting, interesting and inviting" form of exercise.	**Perceptions of/meaning of physical activity** *Not addressed by study **Barriers** *Unacceptable forms of physical activities offered at school **Facilitators** *Provision of acceptable forms of physical activity (e.g. aerobics for young women)

APPENDIX F: Synthesis Matrix

Physical activity and the school

Young people's views on barriers and facilitators		**Interventions (included in in-depth review) which address barriers or build on facilitators identified by young people**	
Barriers	**Facilitators**	**Soundly evaluated interventions**	**Not soundly evaluated interventions**
That stop young people taking part *Negative experiences of PE at school for young women (*Y3*, *Y11*, *Y12*) in terms of: (i) inappropriate activities and lack of choice/consultation over activities (e.g. bored with 'traditional' PE activities) (ii) 'PE environment' (showers, changing facilities, gym kit) and 'rules and arrangements' surrounding PE (e.g. lack of time for changing) *Negative experiences among both sexes relating to attitudes of teachers (e.g. unsupportive comments; not taking young women seriously) (*Y3*, *Y8*, *Y11*, *Y12*, *Y16*) *Lack of facilities for leaving bicycles at school (*Y1*) (*Y11*) *Complex rules for "games" (*Y8*)	**That help young people to take part in physical activity** *For young men, current participation in sport is partly as a result of positive experiences of PE at school. (*Y3*) *Respect for PE teachers (*Y8*) **That young people think could or should be done** *Choice of 'non-traditional' activities such as aerobics, ice-skating, swimming, cycling for young women (*Y3*, *Y11*, *Y12*) *Consultation in choice of activities (*Y11*) *The chance to participate in mixed sex activities and for some young women, the chance to participate in activities traditionally seen as being for young men (*Y3*, *Y11*, *Y12*)	*The evaluation of the 'Wessex Healthy School Award' (which aimed to support a 'whole school' approach to health promotion) found increases in self-reported physical activity amongst older females. It is not clear what changes were implemented to promote physical activity. (*OE8*) *'Slice of Life' involved projects involving young people in lobbying for health supporting environmental changes in their schools. It is not clear what kinds of changes were considered for physical activity promotion or whether these changes were implemented. However, the overall intervention was found to be ineffective for physical activity outcomes (*OE5*) *The 'Know Your Body' Programme included teacher-led classroom education and endurance exercises to build skills and strength, but it is unclear what approaches were used. This study was effective for decreasing cholesterol and systolic blood pressure (*OE11*). *N.B. the effects in OE12 were judged by the reviewers to be unclear.* *None of the interventions looked specifically at gender and PE; changing the PE environment/rules and arrangement; or increasing storage facilities for bicycles at school	*Several interventions involved increasing the range of activities such as dancing, gymnastics, 'jazzercise', weight lifting, 'health hustles (moving to music) in the PE curriculum. Reviewers judged these to be unclear in their effects. (*OE1*, *OE3*, *OE4*, *OE10*). *None of the interventions looked specifically at gender and PE; changing the PE environment or rules and arrangement; or increasing storage facilities for bicycles at school

Key to young people's views studies
(*Y1*) Balding *et al*. (1997)
(*Y2*) Birtwistle and Brodie (1991)
(*Y3*) Coakley and White (1992)
(*Y4*) Gentle *et al*. (1994)
(*Y5*) Harris (1993)
(*Y6*) Hopwood and Carrington (1994)
(*Y7*) Kincey *et al.* (1993)
(*Y8*) Mason (1995) (*Y9*) Miller (1993) (*Y10*) Mitchell (1997) (*Y11*) Mulvihill *et al*. (2000a)
(*Y12*) Orme (1991) (*Y13*) Rogers *et al.* (1997)
(*Y14*) Warburton (1998) (*Y15*) SCWI (1994) (*Y16*) SCWII (1994)

Key to intervention studies - *denotes a sound outcome evaluation
(*OE1*) Baranowski (1990) (*OE2*) Bush (1989a) (*OE3*) Flores (1995)
(*OE4*) Hooper *et al*. (1993)
(*OE5*) Kelder *et al*. (1993)
(*OE6*) Moon *et al*. (1999a)*
(*OE7*) Nader *et al*. (1989)
(*OE8*) Perry *et al*. (1987)*
(*OE9*) Petchers *et al*. (1987)
(*OE10*) Vandongen *et al*. (1995) (*OE11*) Walter I (1989)*
(*OE12*) Walter II (1989)*

APPENDIX F: Synthesis Matrix (cont'd)

Physical activity, family and friends

Young people's views on barriers and facilitators		**Interventions (included in in-depth review) which remove/reduce barriers or build on facilitators identified by young people**	
Barriers	**Facilitators**	**Soundly evaluated interventions**	**Not soundly evaluated interventions**
*Parental constraint on walking to school (*Y1*) *Parental constraint on young women's leisure time, arising from: (i) Concerns about safety (e.g. staying late at after school activity clubs) (*Y13*) (ii) Monitoring leisure time to ensure that have time to do homework and domestic chores (*Y3*) (iii) Disapproval of exercise (Bangladeshi and Muslim young women) (*Y9*, *Y13*) *Boyfriends' preferences for leisure time activities are put first (*Y3*) *Fear of negative evaluation from peers (*Y3*, *Y8*) *Prejudiced attitudes of boys (*Y9*)	**That help young people to take part in physical activity** *Parental support (e.g. in terms of encouragement and material resources) (*Y3*, *Y8*, *Y15*, *Y16*) *Social aspects of taking part in physical activity help to motivate young people to participate (e.g. chance to make new friends) (*Y7*, *Y11*) *Social support from friends is important for young women (*Y3*, *Y5*) **That young people think could or should be done** *Encourage physical activity by emphasizing fun and social aspects (*Y11*) * Combining sports and (non-active) leisure facilities to emphasis socializing (e.g. Youth clubs to run single sex physical activity sessions followed by mixed sex (non physical) activities) (*Y11*, *Y12*)	*The 'Know Your Body' programme included parental involvement in activities through newsletters and family exercise days. This intervention was judged effective for reducing blood cholesterol levels and systolic blood pressure in young people (*OE11*) *N.B. the effects in OE12 were judged by the reviewers to be unclear.* *No soundly evaluated interventions which address parental restrictions on young women's leisure time as a way of promoting physical activity *A goal of the 'Slice of Life' programme was to create peer support for participation in physical activity but it is not clear how/whether this was achieved and the overall intervention was ineffective for physical activity outcomes (*OE5*) *No soundly evaluated interventions which directly address boyfriends as a barrier but 'Slice of Life' involved teaching skills to resist peer pressure to engage in unhealthy behaviours BUT intervention found to be ineffective for physical activity outcomes (*OE8*) *No soundly evaluated interventions that aim to provide access to combined sports and leisure facilities.	*Four interventions, judged unsound, involved parents and young people to encourage them to undertake exercise together. This was often a small component in the context of a larger intervention. The reviewers judged these to be unclear in their effects (*OE1*, *OE4*, *OE7*, *OE9*). *No interventions which address parental restrictions on young women's leisure time as a way of promoting physical activity *The 'Class of 89' study aimed to provide social support for physical activity as one component of a larger intervention. It is not clear how this was achieved and the reviewers judged the intervention to be unclear in its effects (*OE5*). *No interventions which directly address boyfriends as a barrier *No interventions which aim to provide access to combined sports and leisure facilities

Key to young people's views studies
(*Y1*) Balding *et al*. (1997)
(*Y2*) Birtwistle and Brodie (1991)
(*Y3*) Coakley and White (1992)
(*Y4*) Gentle *et al*. (1994)
(*Y5*) Harris (1993)
(*Y6*) Hopwood and Carrington (1994)
(*Y7*) Kincey *et al.* (1993)
(*Y8*) Mason (1995) (*Y9*) Miller (1993) (*Y10*) Mitchell (1997) (*Y11*) Mulvihill *et al*. (2000a)
(*Y12*) Orme (1991) (*Y13*) Rogers *et al.* (1997)
(*Y14*) Warburton (1998) (*Y15*) SCWI (1994) (*Y16*) SCWII (1994)

Key to intervention studies - *denotes a sound outcome evaluation
(*OE1*) Baranowski (1990) (*OE2*) Bush (1989a) (*OE3*) Flores (1995)
(*OE4*) Hooper *et al*. (1993)
(*OE5*) Kelder *et al*. (1993)
(*OE6*) Moon *et al*. (1999a)*
(*OE7*) Nader *et al*. (1989)
(*OE8*) Perry *et al*. (1987)*
(*OE9*) Petchers *et al*. (1987)
(*OE10*) Vandongen *et al*. (1995) (*OE11*) Walter I (1989)*
(*OE12*) Walter II (1989)*

APPENDIX F: Synthesis Matrix (cont'd)

Physical activity and the self

Young people's views on barriers and facilitators		Interventions (included in in-depth review) which remove/reduce barriers or build on facilitators identified by young people	
Barriers	**Facilitators**	**Soundly evaluated interventions**	**Not soundly evaluated interventions**
*Lack of confidence in skills/feeling not good enough to take part (*Y3*, *Y7*) *Feelings of discomfort during physical activity (young women only) (*Y12*) *Feelings of inertia/lack of motivation (*Y10*) (*Y11*) *Preference for other activities/ conflicting interests (*Y10*) (*Y11*) *Lack of knowledge about benefits of physical activity (*Y5*) *Self-consciousness about bodies/appearance (for young women only) (*Y11*) (*Y12*)	**That help young people to take part in physical activity** *Personal competence is motivation to take part (e.g. chance to show off skills) (*Y3*) *Using physical activity to increase feelings of well-being (e.g. relieve stress; forget troubles; increase confidence) (*Y7*) *Enjoyment and fun (*Y7*) *If currently inactive, motivators are: feelings of well-being; enjoyment; avoiding boredom; help with losing weight (the latter for young women only) (*Y11*) *If currently active, motivators are: social benefits; competitiveness; being part of a team; sense of achievement (*Y11*) **That young people think could or should be done** *Young women considered it to be acceptable to them for 'teenage' magazines to contain articles promoting physical activity (*Y10*) *Young people felt there was enough literature on the availability of current opportunities for physical activity (*Y11*)	*The 10 session educational curriculum in 'Slice of Life' emphasized the benefits of fitness and exercise within the context of heart health and weight control. However, no effects of the intervention were found on physical activity outcomes (*OE8*) *'Know Your Body' provided a two hours/week educational curriculum throughout each school year, emphasizing an endurance exercise programme and prudent diet, and screening for cardiovascular risk factors over time. The programme as a whole was found to be effective for reducing blood cholesterol levels and systolic blood pressure *(OE 11). N.B. the effects in OE12 were judged by the reviewers to be unclear.* *None of the soundly evaluated interventions appear to have directly addressed the other barriers or built on the other facilitators listed in this area	All of the interventions judged to be not sound included educational components which aim to increase knowledge and foster positive attitudes towards exercise. It is not clear from the reports of these studies to what extent they focused on the specific barriers and facilitators identified by the young people (*OE1, OE2*, *OE3*, *OE4*, *OE5*, *OE7*, *OE9*, *OE10*)

Key to young people's views studies
(*Y1*) Balding *et al*. (1997)
(*Y2*) Birtwistle and Brodie (1991)
(*Y3*) Coakley and White (1992)
(*Y4*) Gentle *et al*. (1994)
(*Y5*) Harris (1993)
(*Y6*) Hopwood and Carrington (1994)
(*Y7*) Kincey *et al.* (1993)
(*Y8*) Mason (1995) (*Y9*) Miller (1993) (*Y10*) Mitchell (1997) (*Y11*) Mulvihill *et al*. (2000a)
(*Y12*) Orme (1991) (*Y13*) Rogers *et al.* (1997)
(*Y14*) Warburton (1998) (*Y15*) SCWI (1994) (*Y16*) SCWII (1994)

Key to intervention studies - *denotes a sound outcome evaluation
(*OE1*) Baranowski (1990) (*OE2*) Bush (1989a) (*OE3*) Flores (1995)
(*OE4*) Hooper *et al*. (1993)
(*OE5*) Kelder *et al*. (1993)
(*OE6*) Moon *et al*. (1999a)*
(*OE7*) Nader *et al*. (1989)
(*OE8*) Perry *et al*. (1987)*
(*OE9*) Petchers *et al*. (1987)
(*OE10*) Vandongen *et al*. (1995) (*OE11*) Walter I (1989)*
(*OE12*) Walter II (1989)*

APPENDIX F: Synthesis Matrix (cont'd)

Physical activity and practical and material resources

Young people's views on barriers and facilitators		**Interventions (included in in-depth review) which remove/reduce barriers or build on facilitators identified by young people**	
Barriers	**Facilitators**	**Soundly evaluated interventions**	**Not soundly evaluated interventions**
*Lack of time (*Y5*, *Y7*, *Y10*, *Y11*, *Y13*) *Lack of money (*Y3*, *Y7*, *Y11*) *Provision of activities which are associated with childhood or primary school, are highly structured, or organised by adults (for young women) (*Y3*)	**That young people think could or should be done** *Creation of more cycle lanes (*Y1*) *Make activities more affordable (*Y11*) *Increasing access to clubs for young people to dance (*Y11*) *Single sex physical activities at youth clubs with mixed sex (non-physical) activities afterwards (*Y11*) *Provision of more acceptable forms of physical activity such as aerobics (*Y14*) *More consensus about desirable health behaviour (*Y5*)	*None of the soundly evaluated interventions appear to have directly addressed the barriers or built on the facilitators listed in this area	*One intervention offered free baby sitting and support with transport to help families participate in exercise sessions (*OE1*). The reviewers judged this intervention to be unclear in its effects. *No other interventions identified

Key to young people's views studies
(*Y1*) Balding *et al*. (1997)
(*Y2*) Birtwistle and Brodie (1991)
(*Y3*) Coakley and White (1992)
(*Y4*) Gentle *et al*. (1994)
(*Y5*) Harris (1993)
(*Y6*) Hopwood and Carrington (1994)
(*Y7*) Kincey *et al.* (1993)
(*Y8*) Mason (1995) (*Y9*) Miller (1993) (*Y10*) Mitchell (1997) (*Y11*) Mulvihill *et al*. (2000a)
(*Y12*) Orme (1991) (*Y13*) Rogers *et al.* (1997)
(*Y14*) Warburton (1998) (*Y15*) SCWI (1994) (*Y16*) SCWII (1994)

Key to intervention studies - *denotes a sound outcome evaluation
(*OE1*) Baranowski (1990) (*OE2*) Bush (1989a) (*OE3*) Flores (1995)
(*OE4*) Hooper *et al*. (1993)
(*OE5*) Kelder *et al*. (1993)
(*OE6*) Moon *et al*. (1999a)*
(*OE7*) Nader *et al*. (1989)
(*OE8*) Perry *et al*. (1987)*
(*OE9*) Petchers *et al*. (1987)
(*OE10*) Vandongen *et al*. (1995) (*OE11*) Walter I (1989)*
(*OE12*) Walter II (1989)*

First produced in 2001 by:

Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre)
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ISBN: 0-9548415-3-0