

Physical activity for children and young people

Public health guideline

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Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

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This guideline is the basis of QS84 and QS183.

Overview

This guideline covers promoting physical activity for children and young people aged under 18 at home, preschool, school and in the community. It includes raising awareness of the benefits of physical activity, listening to what children and young people want, planning and providing spaces and facilities, and helping families build physical activity into their daily lives.

Who is it for?

- Children's trusts and services, early years providers, schools and colleges
- Community and voluntary groups (running sports and other organised activities)
- Government departments
- Local authorities (leisure and related services, transport and planning, regeneration) and local strategic partnerships
- Organisations offering practitioners education and training
- The police
- Primary care trusts
- Private sector providers
- Children, young people, their families and carers and members of the public

Introduction

The Department of Health (DH) asked NICE to produce public health guidance on physical activity, play and sport for pre-school and school-age children in family, pre-school, school and community settings.

The guidance is for all those who have a direct or indirect role in – and responsibility for – promoting physical activity for children and young people. This includes those working in the NHS, education, local authorities and the wider public, private, voluntary and community sectors. It will also be of interest to parents, grandparents and other carers (including professional carers), children and young people and other members of the public. It includes recommendations for schools, but does not make recommendations for the national curriculum.

The recommendations relate to all children and young people up to the age of 18, including those with a medical condition or disability (except where clinical assessment or monitoring is required prior to and/or during physical activity). The guidance does not cover specialised services for children and young people with a disability. There is a specific focus on children aged 11 and under and girls aged 11 to 18.

The guidance complements and supports, but does not replace, NICE guidance on obesity, physical activity, physical activity and the environment, depression among children and young people and social and emotional wellbeing in schools.

The Programme Development Group (PDG) developed these recommendations on the basis of reviews of the evidence, an economic analysis, expert advice, stakeholder comments and fieldwork.

Members of the PDG are listed in appendix A. The methods used to develop the guidance are summarised in appendix B. Supporting documents used to prepare this document are listed in appendix E. Full details of the evidence collated, including fieldwork data and activities and stakeholder comments, along with a list of the stakeholders involved and NICE's supporting process and methods manuals are also available.

Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in [NICE's information on making decisions about your care](#).

[Making decisions using NICE guidelines](#) explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

Definitions

Physical activity is 'any force exerted by skeletal muscle that results in energy expenditure above resting level' (Caspersen et al. 1985).

The recommendations refer to opportunities for moderate to vigorous-intensity physical activity in children and young people. The UK recommendations on the type, intensity and duration of activity should be accessed (see the [UK Chief Medical Officers' physical activity guidelines](#) for more information).

Moderate-intensity activity increases breathing and heart rates to a level where the pulse can be felt and the person feels warmer. It might make someone sweat on a hot or humid day (or when indoors). Vigorous activity results in being out of breath or sweating.

Opportunities for moderate to vigorous physical activity include everything from competitive sport and formal exercise to active play and other physically demanding activities (such as dancing, swimming or skateboarding). They also include some of the actions that can be involved in daily life (such as walking, cycling or using other modes of travel involving physical activity).

Groupings, themes and links

The recommendations are grouped as follows:

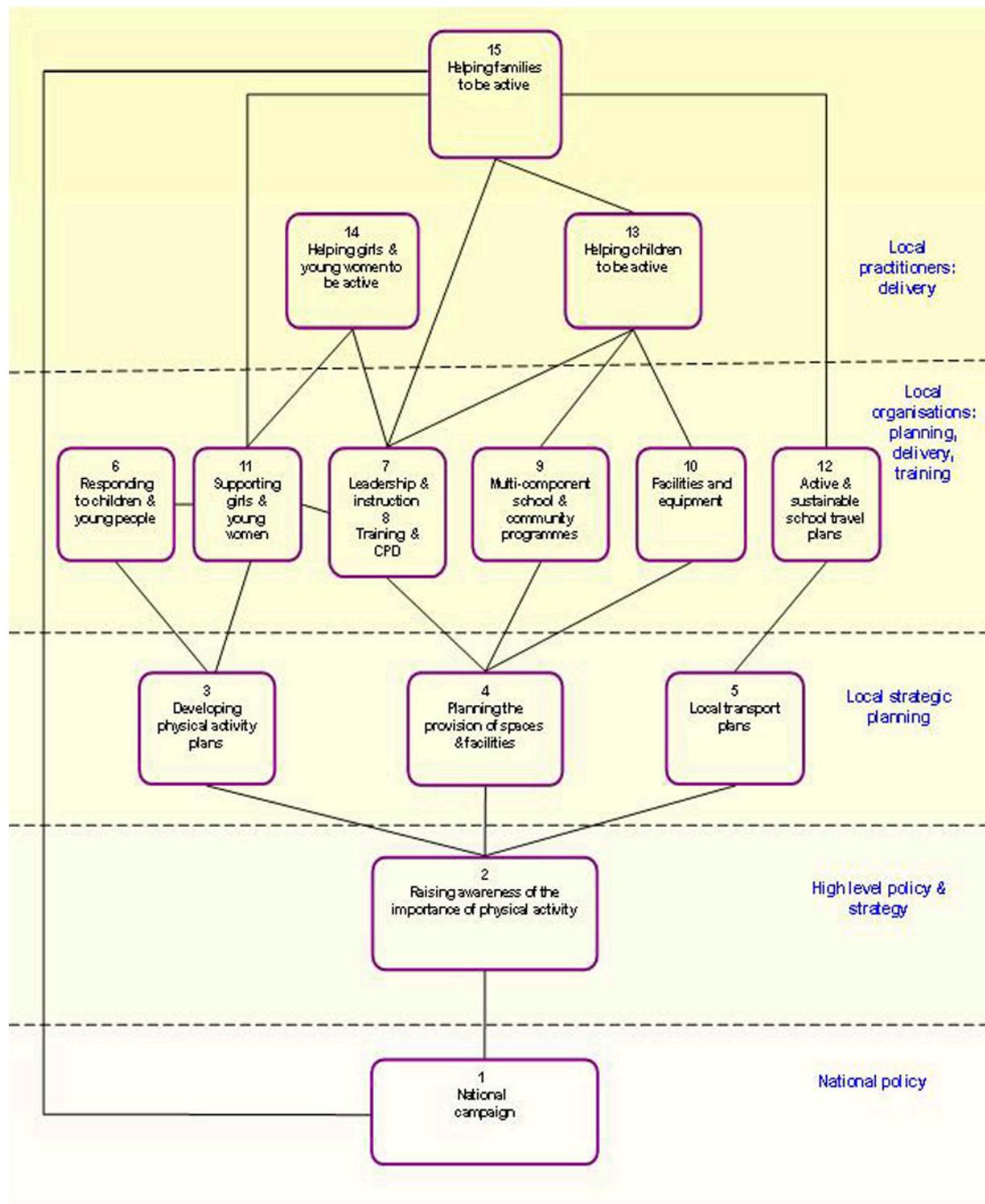
- national policy
- high level policy and strategy
- local strategic planning
- local organisations: planning, delivery and training
- local practitioners: delivery.

There are a number of key themes:

- Promoting the benefits of physical activity and encouraging participation (recommendations 1 and 15)
- Ensuring high-level strategic policy planning for children and young people supports the physical activity agenda (recommendation 2)
- Consultation with, and the active involvement of, children and young people (recommendations 3, 6, 11 and 14)
- The planning and provision of spaces, facilities and opportunities (recommendations 2, 4, 9, 10 and 13)
- The need for a skilled workforce (recommendations 7 and 8)
- Promoting physically active and sustainable travel (recommendations 5 and 12)

The diagram below shows the structure of, and the links between, the 15 recommendations.

How the recommendations link together



Who should take action?

The recommendations are aimed at the following organisations and groups although each organisation and group should be aware of all the recommendations and the links between them:

- Children's trusts and services: 2, 4, 6, 7, 10, 13
- Community and voluntary groups (such as those running sports and other organised activities): 3, 6 to 11, 13 to 15
- Early years providers: 4, 10, 12, 13, 15
- Government departments: 1
- Local authorities (leisure and related services): 2 to 4, 6 to 15
- Local authorities (transport and planning, regeneration): 2 to 5, 12
- Local strategic partnerships: 2, 3
- Organisations offering practitioners education and training: 7, 8
- Parents, families and carers: 13, 15
- Police: 4, 5
- Primary care trusts: 2 to 4, 6, 9, 15
- Private sector providers: 4, 6 to 11, 13 to 15
- Schools and colleges: 4 to 7, 9 to 15.

All the organisations, groups and people listed under 'Who should take action?' in each recommendation are equally responsible for ensuring the recommendation is put into practice.

The recommendations

National policy

Recommendation 1 National campaign

Who is the target population?

- Children and young people aged 18 and under, their families and carers.
- Planners and providers of services and facilities.

Who should take action?

- Department of Health, Department for Children, Schools and Families and Department for Culture, Media and Sport working with:
 - Department for Business, Enterprise and Regulatory Reform
 - Department for Communities and Local Government
 - Department for Energy and Climate Change
 - Department for Environment, Food and Rural Affairs
 - Department for Innovation, Universities & Skills
 - Department for Transport
 - Cabinet Office
 - Home Office
 - Ministry of Justice.

What action should they take?

- Deliver a long-term (minimum 5 years) national campaign to promote physical activity among children and young people. The campaign should be integrated with and support other national health campaigns and strategies to increase participation in play and sport and reduce obesity (such as 'Change4Life').
- Use research, consult and actively involve children and young people and their parents to determine the best media to use, the most effective messages and the most appropriate language for different groups. (Examples of different groups that could be covered include families, parents and carers, and children of different ages, ethnicity and who have different levels of physical ability.)
- Ensure the campaign is consistent and sustained. It should convey that physical activity:
 - is healthy, fun and enjoyable, makes you feel good and can be sociable (that is, it can be undertaken with existing friends or can help develop new ones)
 - promotes children and young people's independence

- helps develop children's movement skills
 - can involve a wide variety of formal and informal activities such as play, dance, swimming, the gym, sport (including street sport and games) and physically active travel (such as walking, cycling and wheelchair travel)
 - can (and should) become a regular part of daily life and that small lifestyle changes can be worthwhile (for example, active travel to school, the shops or the park, using the stairs and ramps instead of lifts and helping with housework)
 - can be maintained by trying new and challenging activities to keep children and young people interested and motivated
 - is something that adults, especially parents and carers, should incorporate into their lives to set an example.
- Ensure the campaign addresses any concerns that parents and carers may have about their children's safety.
 - Encourage regional and local campaigns to use the same messages, as well as promoting examples of local opportunities to be physically active.
 - Develop resources for regional and local dissemination of the campaign (for example, promotional materials and support for those delivering it). (For more on training see recommendation 8.)
 - Use process, impact and outcome measures to ensure national, regional and local campaigns are delivered effectively. For recommendations on the principles of evaluation, see NICE's guideline on behaviour change: general approaches.

High level policy and strategy

Recommendation 2 Raising awareness of the importance of physical activity

Who is the target population?

Children and young people aged 18 and under, their families and carers.

Who should take action?

- Chairs of local strategic partnerships.
- Directors of children's services.
- Directors of public health.

What action should they take?

- Ensure the following explicitly address the need for children and young people to be physically active:
 - children and young people's plans
 - joint strategic needs assessments
 - local development and planning frameworks
 - sustainable community plans and strategies.
- Ensure there is a coordinated local strategy to increase physical activity among children and young people, their families and carers.
- The strategy should ensure:
 - there are local indoor and outdoor opportunities for physical activity where children and young people feel safe
 - individuals responsible for increasing physical activity are aware of national and local government strategies as well as local plans for increasing physical activity
 - partnership working is developed and supported within local physical activity networks
 - physical activity partnerships establish and deliver multi-component interventions involving schools, families and communities. (Partners may include: schools, colleges, out-of-school services, children's centres and play services, youth services, further education institutions, community clubs and groups and private sector providers. Out-of-school services are defined as those providing activities that take place outside the formal school day, possibly as part of extended school services. They could involve using school facilities during the evening, weekends and school holidays)
 - local factors that help children and young people to be (or which prevent them

from being) physically active are identified and acted upon

- local transport and school travel plans are coordinated so that all local journeys can be carried out using a physically active mode of travel.
- Ensure physical activity initiatives aimed at children and young people are regularly evaluated. Evaluations should measure uptake among different groups (for example, among those with disabilities or from different ethnic backgrounds). Any changes in physical activity, physical skills and health outcomes should be recorded. In addition, progress towards local area agreement targets should be monitored.
- Identify a senior council member to be a champion for children and young people's physical activity. They should:
 - promote the importance of encouraging physical activity as part of all council portfolios
 - ensure physical activity is a key priority when developing local authority programmes and targets
 - promote partnership working with council member leads of relevant departments (for example, transport, leisure and health)
 - explain to the public the local authority's role in promoting physical activity.

Local strategic planning

Recommendation 3 Developing physical activity plans

Who is the target population?

Children and young people aged 18 and under, their families and carers.

Who should take action?

- All local authority departments and other local strategic partnership agencies responsible for physical activity facilities and services for children and young people.
- Policy makers and planners working in the public, voluntary, community and private sectors.

What action should they take?

- Identify groups of local children and young people who are unlikely to participate in at least 1 hour of moderate to vigorous physical activity a day. Work with Public Health England Centres, schools and established community partnerships and voluntary organisations to achieve this.
- Involve these children and young people in the design, planning and delivery of physical activity opportunities, using the information gathered.
- Consult with different groups of children and young people and their families on a regular basis to understand the factors that help or prevent them from being physically active. Pay particular attention to those who are likely to be less physically active. Ensure children and young people from different socioeconomic and minority ethnic groups are actively involved in the provision of activities. Also ensure those with a disability (or who are living with a family member who has a disability) are actively involved.
- Use the information gathered to increase opportunities for children and young people to be physically active and to plan dedicated programmes that tackle any inequalities in provision.

For further recommendations on community engagement, see [NICE's guideline on community engagement](#).

Recommendation 4 Planning the provision of spaces and facilities

Who is the target population?

Children and young people aged 18 and under, their families and carers.

Who should take action?

The following should take action in partnership with, or as part of, the local strategic partnership:

- Directors of children's services.
- Directors of leisure and cultural services.

- Directors of planning and regeneration.
- Governors and heads of schools and colleges, office managers and other decision-makers involved with buildings and outdoor spaces within the public, voluntary, community and private sectors.
- Planning and regeneration service managers and project managers and those involved in developing the 'Unitary development plan' (UDP) or other strategic planning documents.
- Representatives from crime and disorder reduction partnerships.

What action should they take?

- Ensure physical activity facilities are suitable for children and young people with different needs and their families, particularly those from lower socioeconomic groups, those from minority ethnic groups with specific cultural requirements and those who have a disability.
- Provide children and young people with places and facilities (both indoors and outdoors) where they feel safe taking part in physical activities. These could be provided by the public, voluntary, community and private sectors (for example, in schools, youth clubs, local business premises and private leisure facilities). Local authorities should coordinate the availability of facilities, where appropriate. They should also ensure all groups have access to these facilities, including those with disabilities.
- Make school facilities available to children and young people before, during and after the school day, at weekends and during school holidays. These facilities should also be available to public, voluntary, community and private sector groups and organisations offering physical activity programmes and opportunities for physically active play.
- Actively promote public parks and facilities as well as more non-traditional spaces (for example, car parks outside working hours) as places where children and young people can be physically active.
- Town planners should make provision for children, young people and their families to be physically active in an urban setting. They should ensure open spaces and outdoor facilities encourage physical activity (including activities which are appealing to children and young people, for example, in-line skating). They should also ensure

physical activity facilities are located close to walking and cycling routes.

- Ensure the spaces and facilities used for physical activity meet recommended safety standards for design, installation and maintenance. For example, outdoor play areas should have areas of shade from the sun and sheltered areas where children can play to reduce the impact of adverse weather.
- Assess all proposals for signs restricting physical activity in public spaces and facilities (such as those banning ball games) to judge the effect on physical activity levels.

For further recommendations on the environment, see [NICE's guideline on physical activity and the environment](#).

Recommendation 5 Local transport plans

Who is the target population?

Children and young people aged 18 and under, their families and carers.

Who should take action?

- Governors and heads of schools and colleges.
- Local transport authorities and executives.
- Police casualty reduction officers.
- Road safety officers.
- School travel advisers.
- Transport planners.

What action should they take?

- Ensure local transport and school travel plans continue to be fully aligned with other local authority plans which may impact on children and young people's physical activity. This includes local area agreements, local area play strategies and healthy school plans. Liaise with the local strategic partnership to achieve this.
- Ensure local transport plans continue to be developed in conjunction with local authority departments and other agencies that provide spaces and facilities for

children and young people to be physically active.

- Ensure local transport plans acknowledge any potential impact on opportunities for children and young people to be physically active. Transport plans should aim to increase the number of children and young people who regularly walk, cycle and use other modes of physically active travel. They should make provision for the additional needs of, or support required by, children, young people and their parents or carers with a disability or impaired mobility. For recommendations on local transport plans, see [NICE's guideline on physical activity and the environment](#).
- Continue working with schools to develop, implement and promote school travel plans (see recommendation 12). This may, for example, include: mapping safe routes to school; organising walk and bike to school days and walking buses; organising cycle and road safety training; and helping children to be 'streetwise'.
- Organise training courses for school travel plan advisers.
- Identify any aspect of transport policies which discourages children and young people from using modes of travel involving physical activity (such as walking or cycling). For example, policies that aim to keep traffic moving may make it difficult to cross the road. Consider how these policies can be improved to encourage physically active travel.

Local organisations: planning, delivery and training

Recommendation 6 Responding to children and young people

Who is the target population?

Children and young people aged 18 and under, their families and carers.

Who should take action?

- Public, voluntary, community and private sector managers and decision-makers responsible for – or able to influence – opportunities for children and young people to be physically active.
- Governors and heads of schools and colleges.

What action should they take?

- Identify local factors that may affect whether or not children and young people are physically active by regularly consulting with them, their parents and carers.
- Find out what type of physical activities children and young people enjoy, based on existing research or local consultation (for example, some might prefer non-competitive or single-gender activities). Actively involve them in planning the resulting physical activities.
- Remove locally identified barriers to participation, such as lack of privacy in changing facilities, inadequate lighting, poorly maintained facilities and lack of access for children and young people with a disability. Any dress policy should be practical, affordable and acceptable to participants without compromising their safety or restricting participation.
- Provide regular local programmes and other opportunities for children and young people to be physically active in a challenging environment where they feel safe (both indoors and outdoors). Ensure these programmes and opportunities are well-publicised.
- Ensure physical activity programmes are run by people with the relevant training or experience.

Recommendation 7 Leadership and instruction

Who is the target population?

People who provide programmes or opportunities for children and young people aged 18 and under to be physically active.

Who should take action?

Employers or supervisors of the above.

What action should they take?

- Ensure informal and formal physical activity sessions for children and young people (including play) are led by staff or volunteers who have achieved the relevant sector standards or qualifications for working with children. This includes the requirements for child protection, health and safety, equality and diversity.

- Ensure staff and volunteers have the skills (including interpersonal skills) to design, plan and deliver physical activity sessions (including active play sessions) that meet children and young people's different needs and abilities. Those leading activities should make them enjoyable. The leaders should also be inspiring. They should raise children and young people's aspirations about what they can participate in – and the level of ability they can achieve. In addition, leaders should help foster children and young people's personal development.
- Use community networks and partnerships to encourage, develop and support local communities and volunteers involved in providing physical activities for children and young people. For recommendations on the principles of networking and partnership working, see [NICE's guideline on community engagement](#).
- Employers should provide regular and relevant development opportunities for employees and volunteers. The impact on practitioner performance and on children and young people's experiences should be monitored.

Recommendation 8 Training and continuing professional development

Who is the target population?

People who provide and deliver physical activity programmes (formal and informal) and other opportunities for children and young people aged 18 and under to be physically active.

Who should take action?

Education and training organisations.

What action should they take?

- Establish continuing professional development (CPD) programmes for people involved in organising and running formal and informal physical activities. The education and training should enable them to:
 - give children and young people information and advice on physical activity, taking into account their needs (for example, their developmental age, physical ability and any medical conditions they may have)
 - give children and young people confidence in their own abilities and motivate

them to be physically active (this includes encouraging them to set goals, where appropriate)

- understand the practical issues and problems that may discourage families or groups of children and young people from getting involved. (This may include, for example, time constraints, access issues – including accessibility for those with a disability – and the cultural appropriateness of activities)
 - develop and foster partnership working and get the local community involved.
- Monitor and evaluate the impact of training on practitioner performance.
 - Train people to deliver physical activity CPD programmes.

Recommendation 9 Multi-component school and community programmes

Who is the target population?

Children and young people aged 4 to 18 who attend school or other education institutions.

Who should take action?

- Public, voluntary, community and private sector organisations involved in designing physical activity projects and programmes.
- Governors and heads of schools and colleges.

What action should they take?

- Identify education institutions willing to deliver multi-component physical activity programmes involving school, family and community-based activities. Identify families, community members, groups and organisations and private sector organisations willing to contribute.
- Develop multi-component physical activity programmes. These should include:
 - education and advice to increase awareness of the benefits of physical activity and to give children and young people the confidence and motivation to get involved
 - policy and environmental changes, such as creating a more supportive school

environment and new opportunities for physical activity during breaks and after school

- the family: by providing homework activities which children and their parents or carers can do together, or advice on how to create a supportive home environment. (For example, advice on how they might help their child become involved in an activity.) It could also include school-based family activity days
- the community: for example, by setting up family fun days and schemes such as 'Play in the park'.

Recommendation 10 Facilities and equipment

Who is the target population?

Children aged up to 11.

Who should take action?

Public, voluntary, community and private sector managers and decision-makers responsible for – or able to influence – opportunities for children to be physically active including:

- early years providers and carers of young children, including those involved with nurseries, playgroups and creches
- school governors, head teachers and teachers
- those working in children's centres.

What action should they take?

- Ensure opportunities, facilities and equipment are available to encourage children to develop movement skills, regardless of their ability or disability (for a definition of movement skills see glossary).
- Provide children with access to environments that stimulate their need to explore and which safely challenge them. (Examples include adventure playgrounds, parks, woodland, common land or fun trails.) Also provide them with the necessary equipment. The aim is to develop their risk awareness and an understanding of their

own abilities as necessary life skills.

- Ensure children have the opportunity to explore a range of physical activities to help them identify those they can enjoy by themselves and those they can do with friends and family.
- Provide daily opportunities for participation in physically active play by providing guidance and support, equipment and facilities. Keep children motivated to be physically active by updating and varying the way physical activities are delivered (including the resources and environments used).
- Ensure opportunities are available after school, at weekends, during half-term breaks and during the longer school holidays. Activities should be led by appropriately trained and qualified staff (paid or voluntary) and take place in schools and other community settings.

Recommendation 11 Supporting girls and young women

Who is the target population?

Girls and young women aged 11 to 18.

Who should take action?

Public, voluntary, community and private sector managers and decision-makers able to influence physical activity facilities, opportunities and programmes for girls and young women.

What action should they take?

- Consult with girls and young women to find out what type of physical activities they prefer. Actively involve them in the provision of a range of options in response. This may include formal and informal, competitive and non-competitive activities such as football, wheelchair basketball, dance, aerobics and the gym. Activities may be delivered in single and mixed- gender groups.
- Offer school-based physical activities, including extra-curricular ones. Provide advice on self-monitoring and individually tailored feedback and advice.
- Address any psychological, social and environmental barriers to physical activity. For

example, provide opportunities in easily accessible community settings with appropriate changing facilities offering privacy. Any dress policy should be practical, affordable and acceptable to participants without compromising their safety or restricting participation.

For further recommendations on community engagement, see [NICE's guideline on community engagement](#).

Recommendation 12 Active and sustainable school travel plans

This recommendation has been replaced by newer guidance. See [recommendation 8 in NICE's guideline on physical activity: walking and cycling](#).

Recommendation 13 Helping children to be active

Who is the target population?

Children aged up to 11.

Who should take action?

- Children's centre staff.
- Early years providers such as playgroup (creche) leaders and child minders.
- Parents and carers.
- Teachers and school support staff.
- Those providing local opportunities for physical activity in the voluntary, community and private sectors.

What action should they take?

- Provide a range of indoor and outdoor physical activities for children on a daily basis, including opportunities for unstructured, spontaneous play.
- Tailor activities according to the child's developmental age and physical ability. Ensure they are inclusive, progressive and enjoyable. The activities should develop the child's movement skills (such as crawling, running, hopping, skipping, climbing, throwing, catching and kicking a ball). Children should also experience more advanced activities

such as swimming, cycling, playing football and dancing.

- Provide opportunities at intervals throughout the day in pre-school establishments; during playtimes and lunch breaks at school; as part of extra-curricular and extended school provision; and during leisure time (including weekends and holidays) in wider community settings and the private sector.
- Help children identify activities they can enjoy by themselves and those they can enjoy with their friends and families.

Recommendation 14 Helping girls and young women to be active

Who is the target population?

Girls and young women aged 11 to 18.

Who should take action?

Practitioners who lead physical activities including youth leaders, teachers, coaches and volunteers.

What action should they take?

- Support participants of all abilities in a non-judgemental and inclusive way. Emphasise the opportunities for participation, enjoyment and personal development, rather than focusing on the evaluation of performance.
- Encourage those who initially choose not to participate to be involved with physical activities in other ways. Help them move gradually towards full participation.
- Encourage a dress code that minimises their concerns about body image. It should be practical, affordable and acceptable to them, without compromising their safety or restricting participation.
- Provide appropriate role models.

Recommendation 15 Helping families to be active

Who is the target population?

Children and young people aged 18 and under, their families and carers.

Who should take action?

Groups and individuals who have regular contact with children, young people, their parents and carers including:

- health practitioners
- local authority personnel
- physical activity professionals in the public and private sector
- teachers and early years providers
- volunteers and staff from community organisations.

What action should they take?

- Ensure parents and carers are aware of government advice on how much physical activity children and young people should be doing (see the UK Chief Medical Officers' physical activity guidelines).
- Provide information and advice on the benefits of physical activity, emphasising how enjoyable it is. Provide examples of local opportunities.
- Encourage parents and carers to get involved in physical activities with their children.
- Encourage parents and carers to complete at least some local journeys (or some part of a local journey) with young children using a physically active mode of travel. This should take place on most days of the week. The aim is to establish physically active travel (such as walking or cycling) as a life-long habit from an early age. Parents and carers should also be encouraged to allow their children to become more independent, by gradually allowing them to walk, cycle or use another physically active mode of travel for short distances.
- Act as a role model by incorporating physical activity into daily life. For example, opt for travel involving physical activity (such as walking or cycling), use the stairs and regularly participate in recreational activities or sport.
- Promote physically active travel as an option for all the family. Raise awareness of how it can help children and young people achieve the recommended daily amount of

physical activity.

Public health need and practice

Children and young people's participation in physical activity is important for their healthy growth and development. It can reduce the risk of chronic conditions (for example, obesity) and improve their general health and wellbeing. Current guidelines recommend that children and young people should do a minimum of 60 minutes of at least moderate-intensity physical activity each day. At least twice a week, this should include activities to improve bone health (weight-bearing activities that produce high physical stresses on the bones, such as running and jumping), muscle strength and flexibility (DH 2004).

The best way to encourage children and young people to be physically active may differ according to their age, developmental stage, culture and gender. For example, improving their physical skills and general ability to participate may make physical activity more enjoyable. It may also help increase their activity levels throughout childhood and into adulthood.

Physical inactivity in England is estimated to cost £8.2 billion a year. This includes both the direct costs of treating major, lifestyle-related diseases and the indirect costs of sickness absence (DH 2004). A sedentary lifestyle is also estimated to cause 54,000 premature deaths a year (Department for Culture, Media and Sport 2002). These costs are predicted to rise.

Children and young people's activity

Objectively measured physical activity data collected in a regional study between 2003 and 2005 suggests that a large majority of children aged 11 are not active enough. Only 2.5% (boys 5.1%, girls 0.4%) did more than 60 minutes of moderate to vigorous physical activity daily (the internationally recognised minimum recommendation for children). They were most active in summer and least active in winter (Riddoch et al. 2007).

In the 'Health survey for England 2007' (The Information Centre 2008a), 63% of girls (compared with 72% of boys) reported being physically active for 60 minutes or more on 7 days a week. Once they reached 10, girls' activity declined with age. At 15, 47% of them achieved the recommended amount – compared with 66% of boys of the same age (The Information Centre 2008a).

The 2006 survey found a link between parents' and their children's activity levels, particularly among girls (The Information Centre 2008b).

Physical activity among those aged 2 to 15 varies according to a range of factors including gender, ethnicity and socioeconomic status (DH 2003; The Information Centre 2008a; 2008b). There was little difference between boys and girls from the main minority ethnic groups in England (Black Caribbean, Indian, Pakistani, Bangladeshi, Chinese and Irish) when it came to participation in sports and exercise, active play and walking. The largest ethnic differences were for sports and exercise, where Indian, Pakistani, Bangladeshi and Chinese children participated less in sports and exercise than children from the general population (DH 2003).

Overall, physical activity did not differ significantly according to household income (The Information Centre 2008a; 2008b). However, the number of those participating in sports and exercise on at least one day increased according to income level, especially among girls. The number who regularly undertook continuous walks of at least 5 minutes on five or more days a week, and the mean number of days spent walking in the preceding week, decreased as income levels increased (The Information Centre 2008b).

It is important to note that the health survey provided self-reported data (or parent-reported data for under 13s) as opposed to objectively measured activity (as in the regional study by Riddoch et al.). However, although the reported activity data in the survey are likely to be less accurate, its larger sample size and greater geographical range does give an idea of general trends.

The number of children walking to school has fallen significantly during the last decade. In 2006, 52% of children aged 5 to 10 and 41% of those aged 11 to 16 walked to school. Only 3% of children aged 5 to 16 cycled to school (Department for Transport 2008).

The 2007/08 'School sport survey' (Department for Children, Schools and Families 2008a) found that 90% of pupils surveyed participated in at least 2 hours of 'high quality' physical education (PE) and out-of-hours school sport in a typical week, compared with 62% in 2003/04. (Seventy eight percent of them participated in at least 120 minutes of curriculum PE – compared with just 34% in the first [2003/04] survey.)

National policy

Many national policies are relevant to children and young people's physical activity.

Important initiatives and policies include the following.

- 'The children's plan' (Department for Children, Schools and Families 2007b) aims to secure the health and wellbeing of children and young people, safeguard the young and vulnerable, increase educational attainment, increase participation and achievement and keep them on the path to success. It recognises that children and young people need to enjoy childhood as well as grow up prepared for adult life. It puts play at the heart of this ambition. 'The children's plan one year on: a progress report' (Department for Children, Schools and Families 2008a) sets out the progress made and the next steps required to achieve these goals.
- 'Change4Life' aims to improve both children and young people's diets and physical activity and 'so reduce the threat to their future health and happiness' (DH 2008a). One of its objectives is to increase the time they participate in regular physical activities. There is a particular emphasis on parent/child activities and the need to avoid prolonged periods of inactivity or sedentary behaviour. It encompasses current health campaigns and healthy living initiatives. Initially its focus is families with children aged 0 to 11.
- 'Healthy weight. Healthy lives. A cross-government strategy for England' (DH 2008b) supports the obesity public service agreement (PSA) target. It aims to bring together all sectors to promote healthy eating and to help children build physical activity into their daily lives.
- 'Choosing activity: a physical activity action plan' (DH 2005). This cross-government plan aims to promote physical activity for all, in accordance with the Chief Medical Officer's report (DH 2004). It encourages physical activity in early years establishments, schools and further and higher education, and aims to extend the use of education facilities as a community resource for sport and physical activity (including out-of-hours), building community capacity for clubs, coaches and volunteers in community sport, and outdoor play. It is linked to a number of PSA targets, two of which are relevant:
 - PSA 12: Reducing the rate of increase in obesity among children under 11 as a first step towards a long-term national ambition, by 2020, to reduce the proportion of overweight and obese children to 2000 levels in the context of tackling obesity across the population (HM Treasury 2008a).
 - PSA 22: In addition to at least 2 hours per week of high quality PE and sport in school for all aged 5 to 16, all children and young people aged 5–19 will be offered

opportunities to participate in a further 3 hours per week of sporting activities provided through schools, further education (FE) colleges, clubs and community providers (HM Treasury 2008b).

- The government's updated plan for physical activity ('The physical activity plan', DH 2009) includes a number of cross-government initiatives. It sets out the cost of physical inactivity in terms of health and the wider impact on the economy. It also sets out how individuals, employers, local authorities, primary care trusts and the voluntary sector can work in partnership to improve physical activity among the population as a whole.
- The 'Child health promotion programme' (DH 2008c) highlights the importance of improving the health and wellbeing of children, as part of an integrated approach to supporting children and families. 'Every child's future matters' (Sustainable Development Commission 2007) and 'Every child matters: change for children' (Department for Education and Skills 2004) focus on wellbeing from birth to 19. They aim to ensure children and young people are 'healthy, stay safe, enjoy and achieve, make a positive contribution and achieve economic wellbeing'.
- A number of initiatives aim to ensure the health and wellbeing of children at school. These include:
 - The National Healthy Schools Programme (DH 2007)
 - 'Extended schools: building on experience' (Department for Children, Schools and Families 2007a)
 - 'PE and sport strategy for young people (PESSYP)' (Department for Children, Schools and Families 2008c)
 - 'Health challenge England' (DH 2006).
- There is an increasing emphasis on the importance of play, with the introduction of a cross-government programme to promote play and work to develop a regional infrastructure and local services.
 - 'The play strategy' aims to create safe, welcoming, interesting, accessible and free places to play in every residential community. Children and young people will have a role in planning. It is backed by £235 million of dedicated investment (Department for Children, Schools and Families 2008d)
 - 'Time for play' (Department for Culture, Media and Sport 2006)

- 'Getting serious about play' (Department for Culture, Media and Sport 2004).
 - A number of initiatives focus on increasing participation in sport and sporting success. These include:
 - 'Playing to win: a new era for sport' (Department for Culture Media and Sport 2008a)
 - 'Before, during and after: making the most of the London 2012 games' (Department for Culture Media and Sport 2008b)
 - 'Sport England strategy 2008–2011' (Sport England 2008).
- 'Free swimming for the under 16s', a cross government initiative announced in July 2008. The government is making available £25 million per annum in 2009/10 and 2010/11 and £10 million in capital funding in 2008/09 to modernise pool provision (Burnham 2008).
 - National policies on active travel and children focus predominantly on school journeys. They aim to reduce car use and promote sustainable modes of travel. Each local education authority should have a sustainable modes of travel strategy to meet the school travel needs of their area (HM Government 2006). A joint Department for Children, Schools and Families and Department for Transport target is for all schools to have an approved school travel plan that addresses sustainability and pupil health and fitness by March 2010 (Department for Education and Skills 2006a).
 - 'Travelling to school initiative' (Department for Transport 2005a)
 - 'Sustainable schools for pupils, communities and the environment' (Department for Education and Skills 2006b).
 - The Department for Transport's home zone initiative aims to make streets more attractive to pedestrians and cyclists by introducing ways to reduce traffic speed (traffic calming measures), parking areas, benches and play areas (Department for Transport 2005b).
 - 'Building brighter futures: next steps for the children's workforce' (Department for Children, Schools and Families 2008e) sets out how the government is further improving the skills and capacity of people who work with children. The aim is to deliver the high-quality, personalised and integrated services detailed in the 'Children's plan' (Department for Children, Schools and Families 2007b).

Non-government initiatives

Non-government initiatives to encourage children and young people to be physically active are also common in England. Some of the organisations working in this area are listed below.

- Play England, part of the National Children's Bureau, provides advice and support to promote good practice. It also works to ensure that policy makers, planners and the public recognise the importance of play. Resources include briefing papers, research reports and a 'Neighbourhood play toolkit CD ROM'. Play England has a contract with the Department for Children Schools and Families and Department for Culture Media and Sport to support the government's 'Play pathfinder' and 'Playbuilder' programmes.
- Youth Sport Trust supports the nationwide network of school sports partnerships. It also works with under-represented groups through programmes such as Girls in Sport, Living for Sport, YoUR Activity, TOP Activity and the Playground to Podium framework for young disabled people.
- The British Heart Foundation runs initiatives and provides physical activity resources. These include: the 'Healthy schools physical activity toolkit' which supports the National Healthy Schools Programme; 'Get moving, get active participation award', a foundation key stage 1 participation award, developed with the Youth Sport Trust; and 'Active club resource pack' for out of school clubs developed with 4children.
- The Fitness Industry Association runs 'go' (an outreach programme) and the 'Adopt a School' programme. Both were developed to help build stronger links between the fitness industry and schools. 'go' aims to help teenage girls (aged 15 and 16) to understand the benefits of being active and show that it can be fun. 'Adopt a school' targets children aged 10 and 11 in the final year of primary school.

While the examples above are by no means exhaustive they demonstrate the current plethora of policies, initiatives and resources. However, many of them focus on sport and sporting opportunities; only a minority appear to promote lifetime physical activity or focus on lifestyle and unstructured activities (Cale and Harris 2006).

Considerations

The PDG took account of a number of factors and issues in making the recommendations.

Value of physical activity

1.1 Physical activity is important for children and young people's health and wellbeing and contributes to their physical, social, emotional and psychological development.

1.2 Physical activity can help prevent long-term medical conditions and help manage existing conditions.

1.3 The Chief Medical Officer's recommendation is for children and young people to do a minimum of 60 minutes moderate to vigorous physical activity daily. This should include weight-bearing activities to improve bone health, muscle strength and flexibility at least twice a week. The PDG notes that there is likely to be a link between the amount and intensity of physical activity and its effect on health. Recent evidence suggests that children aged 9 may need 120 minutes per day and young people aged 15 may need 90 minutes per day, to reduce their risk of cardiovascular disease (Andersen et al. 2006).

1.4 All children and young people should have the opportunity to be involved in physical activity and should be encouraged and supported to participate. Provision and support should be available irrespective of disability, health status, religion, ethnicity, social, economic and other circumstances.

1.5 The PDG believes that only by fostering enjoyment and competence will children and young people be intrinsically motivated to increase and sustain their physical activity levels.

1.6 When encouraging younger children to be physically active the focus should be on fun, enjoyment and active participation, rather than on the need to understand and conform to rules or master complex skills.

1.7 The PDG recognised that the recommendations are more likely to be implemented if they complement current policies that advocate physical activity.

Children and young people's needs

- 1.8 Children and young people need to participate in a wide range of different physical activities.
- 1.9 Children and young people need opportunities, time, space, facilities and equipment, permission and encouragement to be sufficiently physically active. They can be physically active through play and other spontaneous activities, as well as by taking part in structured or organised programmes.
- 1.10 Children and young people need to take risks and challenge themselves when involved in physically active play, sports and other activities, so they can learn their own boundaries. It was not within the PDG's remit to consider what might constitute an acceptable level of risk for children and young people when undertaking physical activity in different settings.
- 1.11 The PDG recognises that activities need to be tailored to the individual's developmental stage and physical ability. Activities also need to be sensitive to culture and gender issues. While it is important to take individual needs and preferences into account, the PDG believes it is also important to raise aspirations and encourage children and young people to explore a variety of options.

Factors that encourage or hinder physical activity

- 1.12 Parents, carers and other family members have a crucial role in encouraging young children to be physically active and in developing their movement skills. They can do this by providing a range of opportunities for physically active play and by playing active games with them. They can also encourage them to walk or cycle (or use other modes of travel involving physical activity) to get to and from different destinations. In addition, they can offer positive feedback, generally show an interest and act as positive role models.
- 1.13 The influence of peers is important and can serve to encourage or discourage physical activity.
- 1.14 Helping children and young people to be involved in the design of activities or play spaces is an important way of encouraging them to be more physically active.
- 1.15 Children and young people's opportunities to be physically active can be affected by

environmental, economic and social factors and perceptions about safety and accessibility. Weather conditions – and their perception of what type of conditions make it suitable to be outside – can also affect the opportunities they take.

1.16 The interests of the community as a whole need to be balanced with the interests of children and young people when promoting unsupervised activity in local neighbourhoods.

1.17 Contemporary society is generally perceived as risky. Media reporting and a private and public culture which emphasises health and safety, blame and rights have made risk aversion a dominant social value. Children and young people benefit from exposure to risks and challenges to help them develop skills and confidence. Many forms of physical activity and play (and the environments where they take place) have inherent risks. Unnecessary risk can be minimised through the use of risk-benefit assessment, safety precautions and safety equipment. Parents' and service providers' fears of injury and litigation can prevent children and young people from being physically active, even though the fear of risk may not necessarily correspond to reality. Paradoxically, in the long run, this can put children and young people at greater risk from the conditions associated with lack of activity – such as obesity, heart disease and cancer.

1.18 The PDG recognises the need for service providers to comply with health and safety legislation but cautions against an overly protective and risk-averse approach which may limit children and young people's physical activity. The physical and psychological benefits associated with physical activity and the health risks associated with a sedentary lifestyle should be considered when appraising risk.

1.19 Some children and young people need special consideration. They include:

- Those who are 'not in education, employment or training' (NEET). PDG experience shows that physical activity has been used to get some of these young people back into education, training or employment. Physical activity programmes may also provide a positive diversion for children and young people who are at risk of offending.
- Looked after children and young people, many of whom move between residential care, foster carers or their own family home. This lack of continuity in their home life reduces their opportunities to access leisure facilities or participate in organised activities on a regular basis. In addition, as social groups are hard to maintain this may limit peer interaction and play.
- Children of asylum seekers, refugees and travellers, many of whom have limited

access to regular leisure, sport and play activities due to their transient lifestyle.

- Young carers – children and young people who are providing care for a family member. The 2001 census identified 175,000 – and many more go unreported. Their responsibilities in the home limit the time they have for socialising with peers and getting involved in play or other types of physical activity.
- Those who are disabled or from a family where someone else is disabled.
- Those who are being educated at home.
- Children who do not attend early years services.
- Young people in the criminal justice system.

1.20 Children with physical disabilities, even those with severe impairments, can take part in physical activities to benefit their physical and social development. Children with the same impairment may display a wide range of abilities and therefore should not be treated as a single group. Many children who are disabled highlight social issues, rather than their impairment, as a barrier to participation. If they are encouraged to communicate their preferences, changes can be made to the physical environment, activities and the attitudes of others to help them to participate. Practitioners can encourage and nurture positive peer interaction through play and other physical activity opportunities.

1.21 The transitions between education institutions – and from education to employment – are times when young people may have less opportunity for physical activities.

Other issues

1.22 Despite extensive searches, it was difficult to find many high quality controlled studies demonstrating the effectiveness of interventions. Where there was little evidence from controlled studies, the PDG considered observational data and evidence from practice. It also drew on the expertise and experience of its members to supplement the evidence

1.23 There was a lack of consistency in the way children and young people's physical activity was measured, making it difficult to assess the effectiveness of comparative studies. In addition, some studies focussed on increases in particular types of physical activity rather than overall levels of activity. As interventions may result in children and young people getting involved in one type of physical activity at the expense of another,

overall, it might not lead to them being more physically active. In other words, the cumulative impact of implementing the recommendations may not be as great as indicated for particular interventions.

1.24 There is little published evidence on the costs or cost-effectiveness of interventions. The economic review team, working with members of the PDG, undertook some exploratory economic analysis to estimate potential costs and benefits.

1.25 Many physical activities involve volunteers (either parents, young people or members of the local community). Those who undertake this kind of work (young people in particular), can act as inspirational role models to others. It is important to ensure this base of volunteers is sustained by providing them with training and support. National volunteering schemes such as 'Vinvolved' and many traditional volunteering and interest groups offer this kind of support to young people and, increasingly, their parents and carers.

1.26 Practitioners' opinions about what children and young people would like to do may differ from the reality; it may be difficult for them to keep up to date with the activities that children and young people are interested in. The PDG also acknowledges that some children and young people may not be aware of the range of physical activities they could get involved in.

- It was not possible to address all aspects of the original DH referral. The guidance focuses on children aged 11 and under and adolescent girls. However, many of the recommendations relate to all children and young people under 18, as it also focuses on physically active travel and physical activity for all children and young people aged under 18 in community and family settings. Physical activity as part of the national curriculum was not part of the scope of this guidance, however it does cover physical activity in extra-curricular and extended school settings.

Recommendations for research

The PDG recommends that the following research questions should be addressed. It notes that 'effectiveness' in this context relates not only to the size of the effect, but also to cost effectiveness and duration of effect. It also takes into account any harmful/negative side effects.

The PDG considered that research funding agencies should establish a nationally coordinated programme to evaluate the most effective and cost effective ways of increasing children and young people's physical activity levels.

1 Tools to measure physical activity

Develop valid, sensitive, and reliable tools to measure physical activity in children and young people. The tools should measure the amount and pattern of activity (including sedentary behaviour).

2 Research in the future

Future research should be conducted with greater rigour, improved study design, appropriate sample sizes, and valid and reliable measures of physical activity. It should include long-term follow-up of participants and monitoring of implementation fidelity. Studies should seek to identify causal pathways leading to a change in physical activity and health outcomes (such as a decrease in body fat and an increase in self-esteem). They should identify any potential mediating variables. They should also investigate the relationship between the length and intensity of the intervention and changes in physical activity (including sedentary behaviour).

3 Physical active mode of travel

Determine the most effective and cost-effective methods of increasing (and sustaining) the number and length of journeys children and young people take using a physically active mode of travel. The focus should be on journeys in the wider community (that is, not just on those to and from school).

4 Different types of physical activity

Determine the most effective and cost-effective methods of increasing and sustaining different types of physical activity among specific groups of children and young people. Groupings could be by: age, culture, ethnicity, disability (including families where someone else is disabled), gender, geographic area (for example, inner-city, urban, rural), religion or socioeconomic status. Particular attention should be given to disadvantaged groups. The interventions examined may target specific behaviours (for example, active play).

5 Displacing physical activity and sedentary behaviour

Determine to what extent different types of physical activity displace others and the factors leading to sedentary behaviour over time.

More detail on the evidence gaps identified during the development of this guidance is in appendix D.

Glossary

Access/accessibility

The ability to use a facility because, for instance, it is free or affordable, it does not require people to travel a long distance to use it and the environment and activities are suitable for those with disabilities. Examples of facilities include playgrounds, parks or open spaces and leisure, youth or community centres.

Active play

The Children's Play Council (now Play England) defines play as: ' ...freely chosen, personally directed, intrinsically motivated behaviour that actively engages the child...' (National Playing Fields Association 2000). Active play involves physical activity.

Displacement

Displacement occurs when children and young people get involved in one type of physical activity at the expense of another, resulting in their overall physical activity levels remaining the same.

Intrinsic motivation

Intrinsic motivation is an internal factor, such as an interest in learning a skill or the desire for further personal development. It compares with extrinsic motivation, which is inspired by external factors such as being given a monetary incentive.

Movement skills

Movement skills use skeletal muscles to achieve a physical goal. They are learnt and refined throughout life. Gross movement skills include: rolling over, sitting up, crawling, walking, running, jumping, hopping and skipping. Fine movement skills include the ability to manipulate small objects and transfer them from hand to hand, and tasks that involve hand-eye coordination.

School travel plan

A written document detailing a package of measures to improve safety and reduce car use, backed by a partnership involving the school, education and local authority transport officers, the police and the health authority. It is based on consultation with teachers, parents, pupils and governors and other local people. It must include: information about the school, a description and analysis of journeys made and the associated problems, a survey of pupils' current and preferred mode of travel, consultation findings, clearly defined targets and objectives, details of proposed measures and a timetable for implementation, clearly defined responsibilities and proposals for monitoring and review.

Sedentary lifestyle

The Health Survey for England (2005) defines children as sedentary if they either do no physical activity at all or less than 30 minutes a day of moderate intensity activity.

Sport

Sport means all forms of physical activity which, through casual or organised participation, aim at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all levels.

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Appendix A: Membership of the Programme Development Group, the NICE project team and external contractors

The Programme Development Group

PDG membership is multidisciplinary. It comprises researchers, practitioners, stakeholder representatives and members of the public as follows:

Gordon Andrews Physical Activity Strategic Lead, Sandwell Primary Care Trust (PCT)

Vicki Birchwood Director of Sport, Salford City Academy, Manchester

Barry Causer Active Travel Service Manager, Sutton and Merton PCT (on secondment from London Borough of Southwark, where he is Sport and Physical Activity Manager)

Issy Cole-Hamilton Policy and Research Manager, Play England at the National Children's Bureau, London

Ashley Cooper Reader in Exercise and Health, Department of Exercise, Nutrition and Health Sciences, University of Bristol

Peter Cooper Children's Work Director, YMCA Fairthorne Group, Southampton

Dr Lindsey Dugdill Reader in Exercise and Health and Associate Dean, (research) Faculty of Health and Social Care, University of Salford

Martin Hagger Reader in Social Health and Psychology, School of Psychology, University of Nottingham

John Hutton Professor of Health Economics, York Health Economics Consortium and the Department of Health Sciences, University of York

Professor Christopher Laws Researcher in Children's Exercise and Health (former Head of

School of Physical Education, University of Chichester)

Patricia Maude Tutor, Homerton College, University of Cambridge

Suzanne Priest Dance Adviser and Advanced Skills Teacher in Dance, National Dance Teachers Association

John Stevens Chief Executive Officer, Active Gloucestershire, University of Gloucestershire

Gareth Stratton (Chair) Professor of Paediatric Exercise Science, Research Institute for Sports and Exercise Sciences, Liverpool John Moores University

Paul Trueman Director, York Health Economics Consortium, University of York

Malcolm Tungatt Policy Manager, Policy and Improvement Team, Sport England

Kim Twine Community Member

Dr Esther van Sluijs Investigator Scientist, Prevention Group, MRC Epidemiology Unit, Cambridge

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Hugo Crombie

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Analyst

Susan Murray

Analyst

Bhash Naidoo

Health Economics Adviser.

External contractors

External reviewers: reviews

Review 1: 'Descriptive epidemiology' was carried out by the NICE Public Health Collaborating Centre for Physical Activity. The principal authors were: Stuart Biddle and Nick Cavill.

Review 2: 'Correlates of physical activity in children: a review of quantitative systematic reviews' was carried out by the NICE Public Health Collaborating Centre for Physical Activity. The principal authors were: Stuart Biddle, Andy Atkin and Natalie Pearson.

Review 3: 'The views of children on the barriers and facilitators to participation in physical activity: a review of qualitative studies' was carried out by the NICE Public Health Collaborating Centre for Physical Activity. The principal authors were: Charlie Foster, Gill Cowburn, Steve Allender and Nicola Pearce Smith.

Review 4: 'Intervention review: under eights' was carried out by the NICE Public Health Collaborating Centre for Physical Activity. The principal authors were: Trish Gorely, Andy Atkin and Charlie Foster.

Review 5: 'Intervention review: children and active travel' was carried out by the NICE Public Health Collaborating Centre for Physical Activity. The principal authors were: Adrian Davis, Ashur Kaur, Nick Cavill and Charlie Foster with assistance from the SURE Information Centre, University of Cardiff.

Review 6: 'Intervention review: adolescent girls' was carried out by the NICE Public Health Collaborating Centre for Physical Activity. The principal authors were: Stuart Biddle, Andrew Atkin, Trish Gorley, Nick Cavill and Charlie Foster.

Review 7: 'Intervention review: family and community' was carried out by the NICE Public Health Collaborating Centre for Physical Activity. The principal authors were: Trish Gorley, Stuart Biddle, Andrew Atkin, Nick Cavill and Charlie Foster.

Review 8: 'Review of learning from practice: children and active play' was carried out by the NICE Public Health Collaborating Centre for Physical Activity. The principal authors were: Nick Cavill and Charlie Foster.

External reviewers: economic appraisal

Review of economic evaluations: 'A rapid review of economic literature related to the promotion of physical activity, play and sport for pre-school and school age children in family, pre-school, school and community settings' was carried out by the Health Economics Research Centre, Oxford. The principal authors were: James Buchanan, Jane Wolstenholme and Charlie Foster.

Cost effectiveness analysis: 'A cost-effectiveness scenario analysis of four interventions to increase child and adolescent physical activity: the case of walking buses, free swimming, dance classes and community sports' was carried out by the Health Economics Group, School of Medicine, Health Policy and Practice University of East Anglia. The principal authors were: Richard Fordham and Garry Barton.

Fieldwork

'Fieldwork on the promotion of physical activity, active play and sport for pre-school and

school age children in family, pre-school, school and community setting' was carried out by Greenstreet Berman.

Appendix B: Summary of the methods used to develop this guidance

Introduction

The reports of the reviews and economic appraisal include full details of the methods used to select the evidence (including search strategies), assess its quality and summarise it. The minutes of the PDG meetings provide further detail about the Group's interpretation of the evidence and development of the recommendations.

All supporting documents are listed in appendix E.

Key questions

The key questions were established as part of the scope. They formed the starting point for the reviews of evidence and facilitated the development of recommendations by the PDG. The overarching questions were:

1. Which strategies, policies, campaigns, interventions and approaches are effective and cost effective in helping children of different ages (with low levels of physical activity) to become more physically active?
2. What are the barriers and facilitators to children's participation in physical activity?
3. Which physical activity strategies, policies, campaigns, interventions and approaches are effective and cost effective in reducing health inequalities among pre-school and school-age children?

These questions were refined further in relation to the topic of each review (see reviews for further details).

Reviewing the evidence

A total of eight reviews were conducted.

Identifying the evidence

Searches were conducted for studies published from January 1990 to April 2007 (except where stated).

The following databases were searched for reviews 2, 4, 5, 6, and 7. Additional searches for these reviews and details for the other reviews are listed separately.

- Applied Social Sciences Index and Abstracts
- ArticleFirst
- Cambridge Scientific Abstract
- CINAHL
- Cochrane Library
- CSA Environmental Sciences
- EMBASE
- ERIC
- Geobase
- Global Health
- ISI Social Science Citation Index
- MEDLINE
- PubMed
- PsycINFO
- Science Citation Index
- SIGLE
- Sociological Abstracts
- SPORTDiscus

- TRIS online
- Web of Science.

Review 1: 'Descriptive epidemiology'

The following databases were searched from 2001 for longitudinal or cohort studies:

- MEDLINE
- Metalib (including ArticleFirst, Physical Education Index, PSYCinfo, SPORTDiscus, Web of Science, Zetoc)
- PubMed.

Web searches were also conducted: a key source was a briefing paper on obesity produced by the NHS.

Review 2: 'Correlates of physical activity in children: a review of quantitative systematic reviews'

In addition to searching the main databases from 2000 to April 2007, manual searches were conducted of the following key peer-reviewed journals:

- 'International journal of behavioural nutrition and physical activity'
- 'Journal of physical activity & health'
- 'Obesity reviews'
- 'Pediatric exercise science'
- 'Preventive medicine'
- 'Sports medicine'.

Primary research articles, reviews and book chapters, as well as research team members' files were also searched. In addition, the websites of four UK and US organisations involved in commissioning, undertaking or cataloguing research on physical activity and young people were searched for 'grey' literature. These were:

- [Play England](#)
- [Sustrans](#)
- [Active Living Research \(US\)](#)
- [Institute of Education, University of London](#)

Review 3: 'The views of children on the barriers and facilitators to participation in physical activity: a review of qualitative studies'

The following databases were searched to identify non-intervention qualitative studies published since 1990:

- CINAHL
- CSA Environmental Sciences
- EMBASE
- Environmental Sciences and Pollution Management
- ERIC
- Index to Thesis
- PsycINFO
- Science Citation Index and SSCI
- SIGLE (ends 2005)
- SPORTDiscus
- TRIS online.

In addition, the websites of four UK and US organisations involved in commissioning, undertaking or cataloguing research on physical activity and young people were searched for 'grey' literature. These were:

- [Play England](#)
- [Sustrans](#)

- Active Living Research (US)
- Institute of Education, University of London

Reviews 4, 5, 6 and 7: 'Under eights', 'Children and active travel', 'Adolescent girls', and 'Family and community'

In addition to the main database search, the following were also searched:

- Environline
- EPPI Centre Databases
- HMIC
- NRR
- TRANSPORT
- The 'Journal of physical activity and health'.

Review 8: 'Review of learning from practice: children and active play'

Two PDG members helped to identify a list of relevant references, based on an iterative search of material in the Children's Play Information Service at the National Children's Bureau. This was supplemented by web searches and re-interrogation of the search results from the other reviews. References were screened for relevance by two reviewers.

Selection criteria

Inclusion and exclusion criteria for each review varied. However, in general studies were included as follows.

- Review 1: Studies conducted in England or the UK (as long as they included England) that questioned children and young people on physical activity in childhood and adulthood.
- Review 2: Studies classified as review papers and using systematic methodologies, if they looked at the association between quantitatively measured variables and children or adolescents' (<19 years old) physical activity.

- Review 3: Studies which explored children's, adolescents' (<19 years old) or carers' experiences of sport, play and active travel. Methods and results had to be clearly reported and the study had to be relevant to the UK.
- Reviews 4, 5, 6 and 7: Intervention studies on children under eight, active travel, adolescent girls, and family and communities, if they reported on physical activity or physical skills. See the reviews for further details.
- Review 8: Material directly applicable to the UK. It was not limited by quality or study design, but needed to illustrate or describe the opinions and experiences of children, parents and practitioners about how to stimulate – or help stimulate – active play.

Studies were excluded if:

- they focused on treating obesity
- they were from less economically developed countries
- they were studies about ethnic groups that do not have large populations in England
- the intervention involved the school curriculum/physical education
- the study involved a change to the built or natural environment.

Quality appraisal

For reviews 3–7, included papers were assessed for methodological rigour and quality using the NICE methodology checklist, as set out in the NICE technical manual 'Methods for development of NICE public health guidance' (see [appendix E](#)). Each study was described by study type and graded (++, +, -) to reflect the risk of potential bias arising from its design and execution.

Study type

- Meta-analyses, systematic reviews of randomised controlled trials (RCTs) or RCTs (including cluster RCTs).
- Systematic reviews of, or individual, non-randomised controlled trials, case-control studies, cohort studies, controlled before-and-after (CBA) studies, interrupted time series (ITS) studies, correlation studies.

- Non-analytical studies (for example, case reports, case series).
- Expert opinion, formal consensus.

Study quality

- ++ All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions are thought very unlikely to alter.
- + Some criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are thought unlikely to alter the conclusions.
- Few or no criteria fulfilled. The conclusions of the study are thought likely or very likely to alter.

The studies were also assessed for their applicability to the UK.

Summarising the evidence and making evidence statements

The review data was summarised in evidence tables (see full reviews).

The findings from the included papers in each review were synthesised and used as the basis for a number of evidence statements relating to each review question. The evidence statements reflect the strength (quantity, type and quality) of evidence and its applicability to the populations and settings in the scope.

Economic analysis

The economic appraisal consisted of a review of economic evaluations and a cost-effectiveness analysis.

Review of economic evaluations: 'A rapid review of economic literature related to the promotion of physical activity, play and sport for pre-school and school age children in family, pre-school, school and community settings'

The following databases were searched for economic literature that had not been

identified through the search of the effectiveness reviews:

- EconLIT
- Health Economic Evaluation Database (HEED)
- NHS Economic Evaluation Database (NHS EED).

Relevant websites were searched (for example, Sport England and Department for Transport). Other sources included papers identified from the personal libraries or collections of members of the health economics team.

Studies were included if they were:

- based in economically developed countries and considered the promotion of physical activity, play and sport for children
- economic evaluations or contained cost, resource use or outcomes data which could be used to inform the economic modelling.

Cost-effectiveness analysis: 'A cost-effectiveness scenario analysis of four interventions to increase child and adolescent physical activity: the case of walking buses, free swimming, dance classes and community sports'

An economic model was constructed to incorporate data from the reviews of effectiveness (reviews 4,5,6,7) and cost effectiveness.

Fieldwork

Fieldwork was carried out to evaluate how relevant and useful NICE's recommendations are for practitioners and how feasible it would be to put them into practice. It was conducted with practitioners and commissioners who are involved in providing physical activity services for children and young people. They included those working in the NHS, education, local authorities and the voluntary and community sector.

The fieldwork comprised three studies conducted by Greenstreet Berman:

- Ten workshops carried out in Birmingham, Liverpool, London, Newcastle with representatives from a variety of professional groups. These included: local authority sports, health and play promotion/development services and children's services; primary care trusts (health improvement representatives), county sports partnerships, Play England, Youth Sport Trust and Sport England.
- Thirty-two telephone interviews with representatives from education, parent/carer associations, pre-school organisations and local clubs and associations. Each interview covered five of the draft recommendations.
 - Local clubs: draft recommendations 4, 6, 7, 8, 9, 10, 12, 13, 14
 - Parents and carers: draft recommendations 6, 9, 10, 11, 12, 13, 14, 15
 - Education: draft recommendations 4, 6, 7, 8, 9, 10, 11, 12.
- An online survey of schools, covering the eight draft recommendations that were directly relevant to them (4, 6, 7, 8, 9, 10, 11, 12).

The three studies were commissioned to ensure there was ample geographical and sector coverage. The main issues arising are set out in appendix C fieldwork findings. The full fieldwork report is 'Fieldwork on the promotion of physical activity, active play and sport for pre-school and school age children in family, pre-school, school and community setting'.

How the PDG formulated the recommendations

At its meetings in 2007/2008, the PDG considered the evidence to determine:

- whether there was sufficient evidence (in terms of quantity, quality and applicability) to form a judgement
- whether, on balance, the evidence demonstrates that the intervention is effective or ineffective, or whether it is equivocal
- where there is an effect, the typical size of effect.

The PDG developed draft recommendations through informal consensus, based on the following criteria:

- Strength (quality and quantity) of evidence of effectiveness and its applicability to the

populations/settings referred to in the scope.

- Effect size and potential impact on population health and/or reducing inequalities in health.
- Cost effectiveness (for the NHS and other public sector organisations).
- Balance of risks and benefits.
- Ease of implementation and the anticipated extent of change in practice that would be required.

The PDG also considered whether a recommendation should only be implemented as part of a research programme where evidence was lacking.

Where possible, recommendations were linked to evidence statements (see [appendix C for details of evidence statements](#)). Where a recommendation was inferred from the evidence, this was indicated by the reference 'IDE' (inference derived from the evidence).

The draft guidance, including the recommendations, was released for consultation in August 2008. At its meeting in October 2008, the PDG amended the guidance in light of comments from stakeholders and experts and the fieldwork. The guidance was signed off by the NICE Guidance Executive in December 2008.

Appendix C: The evidence

This appendix sets out the evidence statements taken from eight reviews provided by external contractors/public health collaborating centres (see [appendix A](#) for details of the external contractors and collaborating centres) and links them to the relevant recommendations (see [appendix B](#) for the key to study types and quality assessments). The evidence statements are presented here without references – these can be found in the full review (see [appendix E](#) for details of the full review). It also sets out a brief summary of findings from the economic appraisal and the fieldwork.

The eight reviews are:

- Review 1: 'Descriptive epidemiology'
- Review 2: 'Correlates of physical activity in children: a review of quantitative systematic reviews'
- Review 3: 'The views of children on the barriers and facilitators to participation in physical activity: a review of qualitative studies'
- Review 4: 'Intervention review: under eights'
- Review 5: 'Intervention review: children and active travel'
- Review 6: 'Intervention review: adolescent girls'
- Review 7: 'Intervention review: family and community'
- Review 8: 'Review of learning from practice: children and active play'.

Evidence statement number 2.4 indicates that the linked statement is numbered 4 in review 2 'Correlates of physical activity in children: a review of quantitative systematic reviews'. **Evidence statement 4.1** indicates that the linked statement is numbered 1 in review 4 'Intervention review: under eights'.

See the [reviews](#) and the [economic appraisal](#). Where a recommendation is not directly taken from the evidence statements, but is inferred from the evidence, this is indicated by **IDE** (inference derived from the evidence).

Recommendation 1: evidence statements 2.4, 3.1, 3.2, 3.3, 3.4, 7.1b, 7.6, 8.4

Recommendation 2: evidence statements 3.1, 3.2, 7.5

Recommendation 3: evidence statements 3.1, 3.2, 3.3, 3.4

Recommendation 4: evidence statements 2.5, 8.1

Recommendation 5: evidence statements 5.1, 5.2, 5.3, 5.4

Recommendation 6: evidence statements 3.1, 3.2, 3.4

Recommendation 7: evidence statement 3.2

Recommendation 8: evidence statements 3.1, 8.1

Recommendation 9: evidence statement 7.5

Recommendation 10: evidence statements 3.2, 4.3, 8.4

Recommendation 11: evidence statement 3.1, 6.1

Recommendation 12: evidence statements 2.4, 3.3, 5.1, 5.2, 5.3, 5.4

Recommendation 13: evidence statements 3.2, 4.3

Recommendation 14: evidence statements 3.1

Recommendation 15: evidence statements 2.4, 3.2, 7.1a, 7.5, 8.5

Evidence statements

Evidence statement 2.4

There is evidence from four systematic reviews of observational studies that: there is a large positive association between parental and social support and physical activity in young people.

Evidence statement 2.5

There is evidence from four systematic reviews of observational studies that there is a:

- small-to-moderate positive association between access to facilities and participation in physical activity in young people
- moderate negative association between distance from home to school and physical activity in young people
- moderate-to-strong positive association between time spent outside and physical activity in young people
- small negative association between local crime and physical activity in young people.

Evidence statement 3.1

There is evidence from 15 UK qualitative studies of adolescent girls (reported in 16 papers) (two [++]; six [+] and eight [-]) that the main barriers to being physically active were:

- social pressure to conform, (for example, wanting to fit in)
- negative experience of the school environment (for example, inappropriate school PE kit and discomfort about sharing showers, changing rooms)
- negative experiences of sports facilities (for example, public spaces such as gyms or exercise classes were intimidating to teenage girls)
- having to perform in public (for example, being forced to perform a skill in front of peers)
- fear of forced competition (one study [++] reported that creating a supportive environment for the delivery of a curricula focused on participation rather than competition and empowering students led to non-active student becoming more active)
- fear of sexual or racial harassment (for example, Asian girls described needing escorting by family member to places to participate in sports).

The main facilitators to being physically active were:

- social and family influences (for example, social sanctioning of activities by peers provided opportunities to gain social standing and was likely to encourage continued or increased participation; having active siblings and supportive parents)
- enjoyment (for example, enjoyment and fun during sport and physical activity; enjoyment might outweigh the impact of negative peer pressure not to participate)
- socialisation (for example, sport provides the opportunity to socialise with friends and extend friendship networks beyond school)
- intrinsic and extrinsic rewards (for example, wanting to participate in sport as a means to achieve a socially desirable body type; receiving praise and encouragement from PE teachers helped with self confidence and a positive self identity).

Evidence statement 3.2

There is evidence from five UK qualitative studies of children aged 8 and under (three [+] and two [-]) that: there were far fewer barriers to physical activity and sport compared with other age groups. Barriers were:

- dislike of a focus on team sports (for example, team sport focus in primary schools)
- gender and cultural stereotyping about appropriateness of some sports for particular genders by parents and peers for example, parent viewing boys more active than girls; some sports were more 'appropriate' for boys to play than girls; boys not allowing girls to play 'boys games')
- costs of participation in organised sports (for example, cost in terms of time and money in participating)
- dislike of physical activities becoming less fun and more technical and performance-orientated (for example, girls stopped participating in ballet as it became more technical and less fun-orientated).

The main facilitators for children aged 8 and under were:

- enjoyment (for example, creative and fun activities; participating in their favourite sports or activities; older children involving younger children)
- parental and peer support (for example, physical activity was healthy; girls and boys enjoyed playing sports more if they had started at a younger age)

- participation in age appropriate activities (for example, fun-based dance activities at younger ages; parent seeing a progression from fun to more structured activity as children became older).

Evidence statement 3.3

There is evidence from three UK qualitative studies of children and active travel that the main barriers to active travel were:

- children and parents' fear of traffic (for example, children feeling unsafe when playing and walking outside, particularly after school)
- parental restrictions on independent movement (for example, parental restrictions on a child's range [distance], plus place and destinations)
- school influence over cycling policy and storage facilities (for example, absence of any school provision of facilities reflecting a lack of support for cycling)
- limited play destinations locally (for example, too far to travel to independently; access dangers due to traffic; play equipment unsuitable)
- adult disapproval of children playing outside (for example, children told off for cycling or playing in streets by adults).

Only one study reported any facilitators for walking and cycling. These included:

- providing personal freedom (for example, reported that walking and cycling increased their personal freedom and independence)
- enjoyment and fun with friends (for example, older children enjoyed walking to school because they could mix with their friends)
- the opportunity to explore local surroundings (for example, gave them the chance to explore local neighbourhoods with their friends and/or alone).

Evidence statement 3.4

There is evidence from two UK studies and two international qualitative studies (both Australian), of families and community that barriers to physical activity and sport were related to personal safety of children while playing outside unsupervised. Common issues

were:

- perceived stranger danger (for example, both parents and children independently reported fear of strangers)
- risk of personal accidents (for example, both parents and children independently reported risk of accidents or getting hurt)
- intimidation from older children (for example, both parents and children independently reported the risk of intimidation or bullying by older children; fear of rival gangs for different areas)
- poor quality of places to play (for example, presence of drug taking equipment (like syringes) in play areas; poorly maintained toilets, shaded areas and lighting).

Facilitators were that children:

- valued opportunities for independent outdoor play (for example, the chance to play away from adult supervision with friends; parents preferring these places for independent play to be courtyards or cul-de-sacs rather than through roads)
- preferred activities that emphasised fun, play and enjoyment rather than skills practice (for example, older children attending athletics club liked playing with friends).

Evidence statement 4.3

There is evidence from one cluster randomised controlled trial in the UK (+), one controlled non-randomised trial in Greece (+) and one controlled before-and-after trial in the USA (-) that supervised physical activity interventions conducted in the pre-school setting can be effective in improving core physical skills such as: running, galloping, hopping, sliding, leaping, skipping and general motor agility.

Evidence statement 5.1

There is evidence from five UK studies (all uncontrolled before-and-after studies [+]) that cycling promotion projects, targeting primary and secondary school children can lead to large self-reported increases in cycling both at 9 to 11 months and over 20 to 23 months. Characteristics of successful interventions included the involvement of external agencies to facilitate schools to promote and maintain cycling, with the support of parents and the local community.

There is evidence from two studies (uncontrolled before-and-after studies [+]), where cycling infrastructure was commonly part of the local transport infrastructure or children were encouraged to cycle to curriculum-related events or sports fixtures, that self-reported levels of walking declined over 20 and 23 months, implying that some of the increase in cycling may have been offset by a decrease in walking. The evidence is applicable to the UK.

Evidence statement 5.2

There is evidence from one UK study (randomised controlled trial [++]) to suggest that the introduction of school travel plans and direct support from a school travel plan adviser at primary schools did not lead to increases in self-reported levels of walking and cycling at 12 months.

There is evidence from one US and one UK study (uncontrolled before-and-after study [+]) to suggest that a mix of promotional measures including curriculum, parental and community promotions (for example, mapping safe routes to school, walk and bike to school days) can increase self-reported walking and cycling at 24 months. In the UK study, this activity was in support of a travel plan. The evidence is applicable to the UK.

Evidence statement 5.3

There is evidence from three UK studies (uncontrolled before-and-after studies [+]) to suggest that walking buses (volunteer-led walking groups supported by parents and teachers plus the involvement of the local highways or transport authority) led to increases in self-reported walking among 5 to 11 year olds, and reduced car use for children's journeys to and from school at 10 weeks and 14 to 30 months.

There is evidence from one study (uncontrolled before-and-after study [-]) to suggest that the provision of a walking bus may in itself not be sufficient to stem a more general decline in walking to and from school. Retaining volunteers to act as coordinators for these schemes appears to be a key factor in the sustainability of walking buses.

Currently walking buses are found to be commonly delivered in the UK, however evidence for their applicability remains uncertain (as they may be applicable only to the specific populations or settings included in the studies).

Evidence statement 5.4

There is evidence from one UK study (controlled before-and-after study [+]), and two UK (uncontrolled before-and-after studies [+]) and one Australian studies (uncontrolled before-and-after study [+]) to suggest that walking promotion schemes, involving promotional materials, incentives and rewards (such as travel diaries for children and parents and provision of 'park and walk' parking areas close to school and restriction of parking outside of schools), can lead to increases in self-reported walking to school among 4 to 11 year olds, and reduced car use for children's journeys to and from school at 4 to 10 weeks and 41 to 48 months.

There is evidence from one UK study (controlled before-and-after study [+]) to suggest that walking campaign packs alone, including promotion materials for children and parents, did not lead to increases in walking among 4 to 11 year olds at 4 weeks.

There is evidence from two UK and one Australia study (uncontrolled before-and-after study [+]) to suggest that targeting children and parents who live a short distance to school (1 mile or less) may support interventions to encourage increase walking levels for the school journey.

The evidence mainly comes from UK studies and so is directly applicable only to populations or settings included in the studies (primary school settings). The success of broader application is uncertain.

Evidence statement 6.1

There is evidence from three cluster randomised controlled trials (one each in Australia [+], France [+], and Ireland [+]), and one controlled non-randomised trial in the USA (-), that school-based interventions outside of physical education lessons, targeting the single behaviour of physical activity, can lead to moderate-to-large increases in physical activity in adolescent girls for up to 6 months. One randomised controlled trial (++) and one cluster randomised controlled trial (+) (both from the USA), failed to show an effect.

Characteristics of successful interventions were not consistent across studies, although three of the four successful trials targeted girls only. Successful interventions included self-monitoring techniques, stage-matched counselling, teacher-led extra-curricular physical activity, and multi-level programming targeting psychological, social and environmental correlates.

The evidence is drawn from non-UK studies and therefore the applicability to the UK is limited.

Evidence statement 7.1a

There is evidence from two randomised controlled trials in the USA (one [++]) and one [+] that family-based physical activity interventions targeting overweight/obese children and/or those at risk for overweight/obesity, can lead to increases in physical activity in young people. However, two randomised controlled trials in the USA (both [+]) failed to show an effect in the same target group. Characteristics of successful interventions included being located in the home and therefore not involving attendance at external sites and focused on small, specific lifestyle changes (2000 more steps per day and a single dietary target). In contrast, unsuccessful interventions required regular attendance at sites external to the home for education and/or physical activity sessions, broader physical activity and dietary behaviour change, and were with 8 to 9 year old African-American girls.

Evidence statement 7.1b

There is evidence from one randomised controlled trial in the USA (+), one randomised non-controlled trial in the USA (+), one controlled non-randomised trial (+) and one uncontrolled before-and-after study (-) that family-based interventions, targeting physical activity, can lead to increases in physical activity in young people. One randomised controlled trial in the USA (++) and one uncontrolled before-and-after study in the USA (-) failed to show an effect. One randomised controlled trial in the USA (-) showed a negative effect. Successful interventions were located mostly in the home and predominantly involved information packs. Two of the successful interventions involved either mothers and daughters or grandmothers, mothers, and daughters exercising together. Unsuccessful interventions all involved regular attendance at physical activity and education sessions outside of the home. Other differences between successful and unsuccessful interventions were not consistent.

Evidence statement 7.5

There is evidence from two cluster randomised controlled trials in Belgium and France (both [+]) and three controlled non-randomised trials in the Netherlands, Greece and the USA (one [+] and two [-]) that interventions involving both the school and family and/or community agencies lead to positive changes in physical activity in boys and girls aged 13 or under. These positive outcomes may include an actual increase in physical activity or

less of a decline in physical activity relative to controls. Successful interventions had multiple components. At the school level this included computer-tailored advice, changes to the school environment, classroom sessions, physical activity sessions, and physical education. Family components included facilitating social support for physical activity, education on creating a supportive home environment, homework activities involving parents, and community sport information. One cluster randomised controlled trial in the USA (+) and one uncontrolled before-and-after study in the USA (-) failed to show an effect. The characteristics of these unsuccessful interventions were not consistently different from those of successful interventions.

Evidence statement 7.6

There is evidence from one controlled non-randomised trial in the USA (+) that social marketing interventions can increase levels of free-time physical activity in children and adolescents (9 to 15 year olds). The social marketing campaign employed engaging messages (primarily via TV advertisements) and promoted opportunities to incorporate physical activity into daily lives. The sustained nature of the campaign (2 years) was considered important to its success. Behavioural changes were seen in the activities targeted by the campaign (for example, free-time activities) and there were no effects on participation in organised sport.

Evidence statement 8.1

There is strong support for the principle of ensuring that children in the foundation stage are given the opportunity for regular outdoor play as part of the school day. Outdoor play should provide opportunities for movement and challenge, and opportunities to play safely with natural elements.

Children's play in outdoor space can be optimised through a number of practical measures such as: seeing the indoor and outdoor spaces as one environment; providing materials specifically for physically active play; making links to the curriculum; provide for diverse active activities; planning to take account of issues such as weather, light, wind direction.

The indoor environment can also be optimised for active play, through providing sufficient space; allowing freedom to move from one area to another; providing good opportunities for energetic physical movement; dividing space into active and quiet zones.

Adults can help to facilitate active play through: creating the right context for play in which

children feel secure and still have the necessary freedom and autonomy to explore through free play; observing play and understanding children's interests, in order to guide the provision of resources and environments for play; interacting appropriately and intervening only when necessary; creating the right environment for play including materials and resources for play, as well as the actual place to play.

Practitioners may limit the amount of outdoor play offered to children due to a number of assumptions: that the outside is dangerous; that higher adult/child ratios are needed outside; that educators are merely supervisors outdoors, and that no learning happens outside; that the weather is a barrier; and that being outside is somehow less healthy. All of these assumptions can be tackled to increase active play outdoors.

There appears to be a strong consensus among practitioners that there should be much more out of hours use of school grounds.

For older children, play facilities are most valued when they are close at hand. If a facility is more than a few hundred metres away, regular use declines dramatically.

Evidence statement 8.4

It is well acknowledged that physical education contributes to the development of core skills. However, there appears to be much less consensus on the role of play in developing core skills.

Core skills can be developed through natural active play, especially when the play is determined by the children themselves.

The role of the play practitioner may be less about planning complex programmes to focus on core skill development, but instead facilitating active play.

Evidence statement 8.5

There is often reluctance by parents and professional carers to also go outside and supervise children playing outdoors in poor weather.

It appears that practitioners are put off by the weather more than children.

There are many examples of ways that this has been tackled, through encouraging

children to spend time outside independently or under supervision in all weathers; encouraging parents and carers to allow their children to be outside; and encouraging nursery and teaching staff to spend time outside with children as part of their formal and informal activities.

There is a great deal of experience of a positive approach to bad weather, much of which has been incorporated into the UK Forest Schools movement, building on its origins in Sweden.

Cost-effectiveness evidence

For this guidance the economic appraisal consisted of a review of economic evaluations and a cost-effectiveness analysis.

- 'A rapid review of economic literature related to the promotion of physical activity, play and sport for pre-school and school age children in family, pre-school, school and community settings'.
- 'A cost-effectiveness scenario analysis of four interventions to increase child and adolescent physical activity: the case of walking buses, free swimming, dance classes and community sports'.

Review of economic evaluations

Overall, the rapid review found that there was very limited economic evidence with respect to the promotion of physical activity, play and sport in the four core areas identified. Only two economic evaluations were appraised on the strength of their evidence, both were from the USA and considered interventions to modify the behaviour of obese children, while one study also considered the behaviour of their obese parents. However, these studies were considered not to be relevant to the development of the guidance due their targeting of only obese children.

Cost-effectiveness analysis

A case study or scenario analysis approach was taken to model four different physical activity programmes and consider the cost effectiveness of each as far as was practical with the available data. The programmes considered were:

- walking buses
- free swimming
- dance classes
- community sports.

The analysis sought to estimate the additional minutes of physical exercise derived from the interventions, and these minutes of exercise per year were used to derive the short-term quality of life improvements for children.

However, there was uncertainty associated with the cost-effectiveness results as, due to the limitations of the evidence, it was necessary to make a number of unverified assumptions within the analyses. The results were also shown to be sensitive to changes in these assumptions.

Only walking buses were estimated to be cost effective. This was assuming a cost-effectiveness threshold of £20,000 per QALY and because of their relatively low cost and that children benefited by being engaged in the activity on a regular basis over time. However, due to the number of assumptions made producing the cost-effectiveness estimates, the PDG was cautious in drawing conclusions.

Fieldwork findings

Fieldwork aimed to test the relevance, usefulness and feasibility of putting the recommendations into practice. The PDG considered the findings when developing the final recommendations. For details, see the fieldwork section in appendix B and the final fieldwork report.

Participants with a direct or indirect role in promoting physical activity, play and sport with children were very positive about the recommendations and their potential to help promote physical activity.

Many participants stated that the recommendations would be both useful and relevant and that, if successfully implemented, would have a significant impact on policy and service provision. Potentially, they could address inconsistencies in the provision and quality of physical activity initiatives.

For service providers and practitioners who are not doing much work in this area, the recommendations were seen to provide useful guidance to help develop new policies. For those already heavily involved in physical activity work, they served to provide reassurance and weight to that work. They were also seen to reinforce aspects of the 'Early years' foundation stage framework, particularly in relation to the provision of safe, secure and challenging environments for physical activity.

Practitioners said the recommendations did not offer a new approach but agreed that the measures had not been implemented universally.

Feedback suggests that many of the stakeholders who should be involved in implementing the recommendations may not be aware that guidance published by NICE would directly impact on their work. They believed wider and more systematic implementation would be achieved if there was an awareness-raising campaign.

Appendix D: Gaps in the evidence

The PDG identified a number of gaps in the evidence related to the programmes under examination, based on an assessment of the evidence in the various reviews. These gaps are set out below.

1. The qualitative literature mainly focuses on school and sport. There is little evidence on formal or informal activities outside school such as yoga, dance, aerobics and play, or activities in social settings. Provision of non-competitive recreational physical activities has rarely been compared with more traditional school sporting activities (in or outside normal school hours). Comparisons between recreational physical activities organised with groups of friends – or with groups of a similar ability – are also lacking.
2. There is limited evidence about what prevents children and young people from being physically active – or what encourages them. Lack of detail in the intervention descriptions means it is unclear whether the barriers or facilitators identified in the qualitative literature were addressed.
3. Few studies report on all physical activities that the participant is involved in. Most only report changes in the activity targeted by the intervention. Whether or not one type of physical activity will displace another – and the factors affecting any such displacement – are not identified.
4. Few studies have investigated the relationship between children's and parents' physical activity over time. There is little evidence about what encourages families to be physically active (either together or split into adult–child groups). There is also little evidence about how families manage competing priorities when planning such activities.
5. Little is known about how children and young people view travel involving physical activity (such as walking and cycling) and how to promote it to them. The exception relates to journeys to and from school.
6. There is little evidence on how to sustain 'active' travel initiatives. For example, little is known about how best to recruit and retain walking bus leaders and local champions, or how effective it is to use pedometers to promote walking among children and young people. In addition, the effect of the environment on uptake (that is, urban versus rural settings and flat versus hilly terrain) has not been properly considered.

7. The intervention literature has methodological limitations. Descriptions of the interventions and evaluation methods used are limited (which may, to some extent, reflect publishing restrictions). In addition, implementation fidelity is rarely assessed and few studies have long-term follow-up. Often studies do not take potential mediator variables into account and do not use objective measures of overall physical activity when measuring effectiveness.
8. Much of the evidence comes from urban settings and its relevance to children from rural areas needs to be considered.
9. No studies were identified that measured the use of rewards to increase participation in – and enjoyment of – organised physical activity.
10. No studies were found which evaluated UK-based, multi-component interventions.
11. Evidence is scarce on how to encourage groups of children and young people who are least likely to be physically active. They include: those with disabilities (or from families where someone else is disabled), those with special educational needs and those from certain minority ethnic groups or traveller and refugee communities.
12. There is a lack of evidence on the effectiveness of private or community-based physical activity provision.
13. There is little evidence of what works to encourage young children to be physically active. For example, the mediating role of parents and practitioners has not been explored. In addition, the evidence about whether or not play initiatives encourage pre-school children to be active is contradictory.
14. There is virtually no evidence on the cost-effectiveness of interventions to increase children and young people's physical activity levels. Many studies use weak measurements of effectiveness (as noted above). As a result, the opportunities to use modelling methods to estimate cost-effectiveness were limited.
15. Few longitudinal studies track the relationship between physical activity and health outcomes. Likewise, few interventions have been well-evaluated over the longer term.

The Group made 5 recommendations for research.

Appendix E: Supporting documents

Supporting documents include:

- Reviews:
 - Review 1: 'Descriptive epidemiology'
 - Review 2: 'Correlates of physical activity in children: a review of quantitative systematic reviews'
 - Review 3: 'The views of children on the barriers and facilitators to participation in physical activity: a review of qualitative studies'
 - Review 4: 'Intervention review: under eights'
 - Review 5: 'Intervention review: children and active travel'
 - Review 6: 'Intervention review: adolescent girls'
 - Review 7: 'Intervention review: family and community'
 - Review 8: 'Review of learning from practice: children and active play'.
- Economic analysis:
 - Review of economic evaluations: 'A rapid review of economic literature related to the promotion of physical activity, play and sport for pre-school and school age children in family, pre-school, school and community settings'
 - Cost-effectiveness analysis: 'A cost effectiveness scenario analysis of four interventions to increase child and adolescent physical activity: the case of walking buses, free swimming, dance classes and community sports'.
- Fieldwork report: 'Fieldwork on the promotion of physical activity, active play and sport for pre-school and school age children in family, pre-school, school and community setting'.

Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the [NICE topic page on physical activity](#).

For full details of the evidence and the guideline committee's discussions, see the [evidence reviews](#). You can also find information about [how the guideline was developed](#), including [details of the committee](#).

NICE has produced [tools and resources to help you put this guideline into practice](#). For general help and advice on putting NICE guidelines into practice, see [resources to help you put guidance into practice](#).

Update information

Minor changes since publication

August 2020: Details of recommended levels of physical activity have been replaced with a link to the UK Chief Medical Officers' 2019 physical activity recommendations.

August 2018: Links to other guidance have been updated when the guidance has changed or been replaced since original publication. Organisations and job titles in some recommendations have been changed or deleted if these have changed since original publication. Recommendation 12 has been replaced with a link to newer guidance on the topic.

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