

# Consensus Statement

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## Health Enhancing Physical Activity for Young People: Statement of the United Kingdom Expert Consensus Conference

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An expert consensus development process was initiated to make public health recommendations regarding young people (5–18 years) and physical activity. Eight commissioned review papers were discussed at a meeting of over 50 academics and experts from a range of disciplines from the UK and overseas. Participants agreed on a consensus statement that summarized the research evidence and made two core recommendations. First, to optimize current and future health, all young people should participate in physical activity of at least moderate intensity for 1 hour per day. Young people who currently do little activity should participate in physical activity of at least moderate intensity for at least half an hour per day. The subsidiary recommendation is that, at least twice a week, some of these activities should help to enhance and maintain muscular strength and flexibility and bone health. A second aspect of the consensus process, which was based on extensive consultation, outlined the practical ways in which key organizations can work together to implement these recommendations. The resultant consensus statement provides a strong basis for the planning of future policies and programs to enhance young people's participation in health-enhancing physical activity

### Introduction

Much progress has been made in recent years on the promotion of physical activity among adults. There is a wealth of data on the health benefits of physical activity, and strong international consensus on the amount and type of physical activity that is beneficial for health (30, 36, 61). The same cannot be said for young people,

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however. The evidence base is weaker than that for adults, and there continues to be great debate about the nature and extent of any public health problem, and the range of possible solutions (27, 42).

There is also disagreement in the field about the amount and types of physical activity that should be recommended for young people. Several professional groups have published different recommendations (15, 18, 45). One of the goals of the consensus process was to examine these recommendations and revise them if necessary.

In 1997, the UK Health Education Authority began to tackle this issue by beginning a process of expert consultation and review of the evidence related to the promotion of health-enhancing physical activity for young people. The aim of this process was to produce a policy framework from a public health perspective that would maximize the opportunity for young people to participate in a lifetime of regular health-enhancing physical activity. To produce such a framework, there was a need to:

- Establish expert consensus on the recommended level and type of physical activity for young people;
- investigate the key issues affecting young people's participation in physical activity;
- identify the most effective strategies to ensure participation throughout life;
- identify future research priorities;
- seek views from key sectors, organizations, and practitioners on their potential contribution.

## **The Consensus Process**

Eight experts were commissioned to prepare review papers on key aspects of the field of physical activity and young people (1, 2, 20, 34, 37, 41, 44, 68) Following a review process, drafts of these papers were presented at a 2 day symposium in 1997, called "Young and Active?" This meeting brought together over 50 academics and experts from a range of disciplines within the field of young people and physical activity, from the UK and overseas.

Led by a chair and discussant, attendees discussed the key papers, and recommendations based on the evidence presented. In a final session, participants discussed the main recommendations of the meeting. Where evidence was unavailable or insufficient, expert opinion was drawn upon.

Following the meeting, a draft policy framework was prepared and issued for consultation, and amendments were made accordingly. The eight papers were edited and published with the policy framework as a monograph from the Health Education Authority (9).

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This paper presents a summary of these review papers, and gives the key outcomes from this consensus and review process. It represents the views of a very broad group of academics and experts concerned with young people and physical activity.

## Definitions

- *Health*: The World Health Organization has defined *health* as: ‘a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity’ (71). More recently it has been seen more broadly as a resource for everyday life, not the objective of living; and a positive concept emphasizing social and personal resources, as well as physical capacities (72).
- *Young people*: People aged 5-18 years.
- *Physical activity*: Any bodily movement produced by skeletal muscles that results in energy expenditure (14).
- *Exercise*: Planned, structured, and repetitive bodily movement done to improve or maintain one or more components of physical fitness (14).
- *Physical fitness*: A set of attributes that people have or achieve that relates to the ability to perform physical activity (14).
- *Physical education*: The part of the school curriculum that aims to educate young people through physical activity. An important aim is to promote the adoption of a physically active lifestyle that persists through adulthood.
- *Moderate intensity physical activity*: Activity usually equivalent to brisk walking, which might be expected to leave the participant feeling warm and slightly out of breath. Such activity is often defined as activities within the 3 to 6 METs (multiples of resting metabolic rate) range (61).
- *Vigorous intensity physical activity*: Activity usually equivalent to at least slow jogging, which might be expected to leave the participant feeling out of breath and sweaty (6 METs and above) (61).

## Benefits of Physical Activity for Young People

PA can have multiple beneficial health outcomes in young people for their current and future health and well-being:

### ***Psychological Well-Being***

PA can enhance psychological well-being (24, 26, 59) and reduce symptoms of depression and anxiety (3).

### ***Self-Esteem***

PA can enhance self-esteem. This is particularly marked in disadvantaged groups such as those with learning difficulties and those with initially low self-esteem. The potential psychological benefits for some young people can be limited by an over-emphasis on competitive performance (11, 53).

### ***Moral and Social Development***

If appropriately structured, PA may enhance social and moral development (43, 53).

### ***Overweight and Obesity***

There are small but significant beneficial effects of increased PA on reducing body fat (8). Evidence supports the role of PA as part of an effective obesity treatment for young people, when combined with appropriate dietary modification (8).

### ***Chronic Disease Risk Factors***

PA has a small but beneficial association with serum lipid and lipoprotein concentrations (10, 19) and blood pressure (3). Recent research has also identified a favourable relationship between PA and a range of factors associated with metabolic syndromes (hypertension, obesity, insulin resistance, impaired lipid, and lipoprotein profile) (29). In addition, weight-bearing and strength-enhancing PA can promote skeletal health in young people (25, 67). The health outcomes for activities that enhance strength, flexibility, and anaerobic components of fitness in young people are, unfortunately, not known.

### ***Physical Activity “Tracking”***

There is a moderate relationship between the amount and type of PA in childhood with that in youth. Current evidence indicates low levels of tracking from youth into young adulthood (58).

### ***Negative Effects of Physical Activity***

PA can increase the risk of musculo-skeletal injuries. Most injuries that do occur are the result of over-exercise, particularly around puberty. However, some activities and sports can increase the risk of accidents, including road accidents, falls, collisions, and other trauma.

## **Comment on the Weak and Inconsistent Associations With Health Outcomes**

Evidence of the relation between physical activity and various physical health outcomes is much weaker for young people than it is for adults. Because activity-related chronic diseases such as cardiovascular diseases, cancers, and type II diabetes are uncommon in youth, risk factors are often used as markers of potential future disease. Although multiple studies show a relation with physical activity in the “healthy” direction for youth, for most risk factors the data are inconclusive. It is instructive to consider possible reasons for weak and inconsistent associations of youth physical activity with risk factors (41).

First, inappropriate definitions of physical activity are commonly used. Many studies assess the relation of sustained vigorous physical activity with risk factors, but young people rarely display this pattern of activity. Second, because young people are generally more active than adults, young people may be active enough

to obtain health benefits. Associations may be underestimated due to limited variance in physical activity and risk factors. Third, many studies are based on young people's self-reports of physical activity, which are known to have limited validity. Fourth, physical activity during youth could impact underlying disease processes (e.g., accumulation of atherosclerotic plaque) that are not reflected in the commonly studied risk factors. Therefore, it would be dangerous to conclude that lack of definitive data on the physical health benefits of youth physical activity means that physical activity is not important for their health. It is a continuing research challenge to clarify health effects during youth. It is also important to keep in mind that there is consistent evidence that physical activity improves psychological health and contributes to obesity control during youth. These effects alone justify efforts to assist all young people in developing regular physical activity habits.

## **Current Levels of Physical Activity and Fitness**

Objective measures have shown that most young people accumulate 30 min or more of moderate intensity PA on most days of the week (4). Young people's PA patterns are characterized by short, rather than sustained, bouts of activity (5). Using a variety of different criteria, research shows that some young people are very active, while others are inactive. Boys are more active than girls from an early age, and both boys and girls reduce their PA as they mature (49). This decline is more marked in girls than boys, and is steeper in adolescence than in childhood (19).

It is not possible to determine objectively whether there has been a decline in PA in recent years in young people, although data on energy intake and body mass indirectly suggest that adolescents in the UK have reduced their energy expenditure (22). There is no evidence that young people's aerobic fitness levels are low or have declined over the past 50 years (4).

The most accurate estimates of PA participation in young people come from objective measures used over several days (4, 49). For public health purposes, it is more important to monitor young people's participation in PA than to monitor fitness.

## **Determinants of Young People's Participation in Physical Activity**

### ***Psychological Determinants***

Enjoyment is particularly important and is consistently associated with participation in PA (65). The factors that influence enjoyment of PA will, however, vary between individuals and groups. There is a consistent association between some key psychological variables and PA in youth: feelings of competence (21, 31), control, and autonomy; self-efficacy (confidence) (47); positive attitudes to PA (23); having personal goals that focus on personal effort and improvement (21); and perceptions of increased benefits and decreased barriers to PA (48). Major differences exist between boys and girls on some of these variables, with girls showing lower levels of perceived competence (12, 32, 66), higher levels of perceived barriers or costs, (48, 60), and lower levels of enjoyment. The importance of determinants may change across the life span of young people, with psychological variables being more important in adolescence. A full understanding of

determinants can only be achieved through studying the interaction of psychological, social, and environmental factors. These determinants should guide the implementation of, and research into, interventions.

### ***Social and Environmental Determinants***

There is substantial evidence that family and peer modeling and support correlate with PA levels of young people (66) and that access to appropriate environments can enhance their participation (46, 50). Mass media, cultural factors, and youth sports organizations can influence PA in young people, but direct data are lacking.

Gender and socioeconomic inequalities in PA in young people appear to reflect inequalities in the broader society (69).

### **Recommended Interventions to Promote Physical Activity**

The most thoroughly evaluated interventions are health-related physical education (PE) programs for primary school pupils, although most data come from the U.S. While studies have tended to focus on physiological outcomes, there is recent evidence that an appropriately designed, delivered, and supported PE curriculum can enhance current levels of physical activity and can improve physical skill development (28, 39, 52, 54). Correlational evidence suggests that families can influence young people's participation in PA, but to date trials of interventions in healthy families have been uniformly ineffective (35).

Observational data show that young people benefit from access to suitable and accessible facilities and opportunities for PA (50, 51). This implies the need for environmental and policy interventions to increase these opportunities.

There is consensus that interventions are likely to be more effective when young people are involved in decision-making and planning of programs.

### **Targeting Interventions**

There is general consensus that interventions are needed to encourage adequate PA for all young people, beginning at a young age, and with a specific focus on the inactive. However, young people are not a homogenous group. Therefore, in light of the scientific data available and from a public health perspective, priority groups are:

- girls aged 12–18 years;
- young people of low socioeconomic status;
- older adolescents (16–18 years).

Priority groups for further investigation of targeted strategies to increase PA include young people:

- from black and minority ethnic groups;
- with physical or mental disabilities;
- with clinical conditions such as obesity, clinical depression, or diabetes.

Evidence suggests that interventions should be differentiated on the grounds of gender, age/life-stage, and socioeconomic status.

## **Recommended Level and Type of Physical Activity for Young People**

From a health perspective, there are three main rationales for encouraging young people to take part in regular physical activity.

- to optimize physical fitness, current health and well-being, and growth and development;
- to develop active lifestyles that can be maintained throughout adult life;
- to reduce the risk of chronic diseases of adulthood.

The recommendations are intended to take into account the current physical activity patterns and lifestyles of young people so that they do not represent unattainable goals that discourage young people from trying to achieve them. They are based on current scientific evidence and expert opinion, but it is acknowledged that neither the minimal nor the optimal amount of PA for young people can be precisely defined at this time. Expert opinion strongly supports these recommendations until further research leads to refinements.

### **Recommendations for Young People and Physical Activity**

#### ***Main Recommendation***

- All young people should participate in physical activity of at least moderate intensity for 1 hour per day.
- Young people who currently do little activity should participate in physical activity of at least moderate intensity for at least half an hour per day.

#### ***Subsidiary Recommendation***

At least twice a week, some of these activities should help to enhance and maintain muscular strength and flexibility, and bone health.

### **Rationale—Main Recommendations**

An average of 1 hour of PA per day is the preferred recommendation because, although the majority of young people are currently meeting the criterion of 30 min of moderate PA per day on most days of the week (4, 6, 16, 35, 55–57, 64), childhood overweight and obesity is increasing in the UK (16). Many young people have been shown to possess at least one modifiable coronary heart disease risk factor (7); and many young people have symptoms of psychological distress (31). Thus, it was concluded the recommendation should stimulate increased physical activity among young people.

For all young people, participating in at least 30 min of PA per day should be seen as a minimum. One hour of activity per day represents a more favorable level and is particularly appropriate for children of primary school age.

Examples of moderate intensity activities for all young people may include brisk walking, cycling, swimming, most sports, or dance. Activities may be carried out as part of transportation, physical education, games, sport, recreation, work, or structured exercise. For younger children, activities can be carried out as part of active play. Such activity may be performed in a continuous fashion or intermittently accumulated throughout the day. Given that young people have demonstrated patterns of intermittent activity, emphasizing the accumulation of PA over the day seems a more practical approach than promoting continuous bouts.

Methods of meeting the recommendation may vary according to stage of maturation. Young children may achieve the recommendation during play, by alternating short bouts of moderate to vigorous PA with rest periods or bouts of lower intensity activity. Teenagers are more likely to be active by performing structured continuous bouts of moderate to vigorous PA through sports, active transportation, dance, or structured exercise. While young people should be physically active nearly every day, PA can vary from day to day in type, setting, intensity, duration, and amount.

### **Rationale—Subsidiary Recommendation**

Participation in strength and weight-bearing activities is positively associated with bone mineral density and is believed to be related to a reduced long-term risk of osteoporosis (17, 25, 58, 62, 63). Muscular strength is particularly important, as it is required to perform activities of daily life such as lifting and carrying, bending, and twisting. Trunk strength and muscular flexibility may be associated with reduced risk of injury and back pain in later life (40).

Activities for younger children that enhance strength include play, such as climbing, skipping, or jumping, whereas for adolescents, they might include structured exercise, such as body conditioning or resistance exercises. Weight-bearing activities that promote bone health include gymnastics, dance, aerobics, skipping, and sports such as basketball. A variety of activities are important to develop strength in a wide range of muscles and bones.

### **Comment: Comparison to Previous Recommendations**

Only recently have physical activity guidelines been developed specifically for young people. Previous recommendations based on consideration of adult data were applied to children (61). Based on literature reviews of the adolescent data, an international consensus group developed two recommendations for adolescents aged 11 to 18 years (45). First, “all adolescents should be physically active daily, or nearly every day.” Because the data did not indicate a desired duration, the adult guideline of 30 min per day was adopted. Second, “adolescents should engage in three or more sessions per week of activities that last 20 min or more at a time and that require moderate to vigorous levels of exertion.” The second guideline was based on several studies showing that participation in bouts of sustained physical activity was associated with favorable health outcomes. A shortcoming of the second guideline is the fact that young people rarely exhibit this activity pattern outside the laboratory.



Corbin, Pangrazi, and Welk (18) proposed a “lifetime physical activity” guideline of a minimum of 30 min per day and an optimum of 60 min per day of moderate to vigorous physical activity for children and adolescents.

The U.S. Council for Physical Education for Children proposed guidelines for primary school children. A minimum of 30 to 60 min per day of physical activity was recommended. However, children were encouraged to engage in “up to several hours per day” of physical activity. “Extended periods of inactivity” were discouraged.

The initial guidelines developed for young people closely paralleled adult guidelines. There has been a trend to increase the recommended minutes of physical activity per day, especially when applied to children. The current guidelines are generally in agreement with others that recommend 30 to 60 min of physical activity per day for young people. While other guidelines encourage a variety of activities, the current recommendation is the first to specify activities that “enhance and maintain muscular strength and flexibility, and bone health.” Although guidelines should continue to be refined as data accumulate, confidence in the current guidelines is strengthened by the systematic examination of the youth literature and the consensus process that involved a wide variety of professionals.

## **Research Needs**

More research is needed to investigate the relationship between the PA patterns of young people and the contribution PA makes to health. This research should involve different methods and disciplines including quantitative, qualitative, and multidisciplinary approaches. Research priorities can be grouped under four headings:

### **Methods**

- To develop reliable and valid measures of various types of PA.
- To develop reliable and valid measures of a range of health outcomes of PA, including mental and skeletal health.

### **Relationship Between PA and Health**

- To conduct prospective population studies that identify the physiological, psychological, and developmental health benefits of PA of different types, intensities, duration, and frequency; and test their appropriateness for different stages of development.
- To investigate which types of PA track over time and to identify factors that affect tracking.

### **Determinants of PA**

- To conduct prospective population studies on the socioeconomic, environmental, cultural, developmental, and behavioral determinants of PA and inactivity in young people.

### **PA Interventions**

- To monitor and evaluate the contribution that schools, and in particular PE, make to PA in young people.

- To monitor and evaluate the implementation and effectiveness of the new PA recommendations among young people, parents, PE teachers, health care providers, and other relevant professionals.
- To identify, develop, and evaluate interventions in a variety of community and family settings that promote PA.

### The Role of Key Organizations

There are many agencies that have a vital role to play in promoting health-enhancing physical activity for young people, both at national, regional, and local level. All of these should recognize the need for greater coordination of effort across a broad range of agencies. Where appropriate, programs should be designed to meet the specific needs of young people, for example, those with disabilities, those from African American and minority ethnic groups, and those from a lower socioeconomic background. Detailed recommendations have been developed for a number of key sectors (9) including: the education sector; local authorities; organizations concerned with sport and recreation and/or young people (such as sports clubs, youth groups); health services; the media; and government departments. These recommendations have been extensively discussed with key people working in each of these sectors, through postal consultation on a draft policy framework, and discussion meetings. These discussions focused on the practical implications of the experts' recommendations and the potential roles of key sectors and organizations. The recommendations therefore should be seen as realistic and feasible ways of implementing the guidelines.

### Conclusions

A wide consensus development and consultation process has been undertaken to develop these recommendations. The review of the evidence and key recommendations represents a considered combination of current scientific evidence and the consensus of expert opinion. A number of practical recommendations for each sector have also been developed as realistic and feasible ways of turning the scientific recommendations into action. While these should be regularly reviewed, particularly in the light of further research, the intervention recommendations provide a strong basis for the planning of future programs to enhance young people's participation in health-enhancing physical activity. This is not a task for one organization or for one sector. Promoting the health of young people through participation in healthy activity is something that challenges us all. People from all parts of society can play a vital role in helping make healthy and enjoyable experiences of physical activity a normal part of childhood.

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