Physical activity and health

Physical activity levels in the UK are low. Only 35% of men and 24% of women reach the recommended 30 minutes of moderate-intensity physical activity at least five times a week. Men tend to be more active than women at all ages, and there is a marked decline in physical activity with age in both sexes. Children are more active than adults. Seventy per cent of boys and 61% of girls reach the recommended 60 minutes of moderate-intensity physical activity a day. Boys tend to be more active than girls and there is a decline in physical activity as children reach adolescence, which is more marked in girls. For adults and children, lower-income groups have particularly low physical activity levels. Although physical activity levels in adults and children have been relatively stable in recent years, there is some evidence to suggest a decline in occupational activity from the 1990s onwards, and a decrease in active transport to school and time spent in school physical education lessons. This has coincided with an upward trend in sports participation (e.g. joining fitness clubs) in adults.

The physiological effects of physical activity are wide ranging, and affect various body systems. As a modifiable component of energy expenditure, physical activity can affect energy balance. However, the total effects of physical activity on total energy expenditure go beyond the physical activity-induced energy expenditure. Increases in resting metabolic rate and non-exercise activity thermogenesis are also seen. Furthermore, physical activity can modify body composition favourably by decreasing fat mass and increasing lean mass. Physical activity can reduce resting blood pressure and increase capacity to carry blood in the coronary arteries. Beneficial changes also occur in the lining of blood vessels which help direct the appropriate distribution of blood in the body. Regular physical activity can also exert beneficial effects on the body’s capacity for forming and breaking down blood clots, and produces favourable changes in plasma lipid profile. Physical activity is known to improve blood glucose handling and is also associated with beneficial immunological (with the exception of intense activities of long duration) and neurological changes.

In terms of its interaction with food intake, physical activity tends not to lead to an increase in energy intake in the short-term. But long-term studies indicate that negative energy balance cannot continue indefinitely; eventually energy intake increases until energy balance is resumed. In those who are physically active, the greater energy intake needed to match energy expenditure means that it is easier to achieve adequate micronutrient intakes. In addition, those who are more active adapt to using fat as an energy substrate more effectively.

Physical activity is commonly assessed using self-reported (subjective) measures such as diaries, physical activity logs, recall surveys and questionnaires, and these methods have been relied upon heavily in epidemiological studies and surveys conducted to date. Unfortunately, self-reported measures of physical activity are limited in terms of reliability and reliance on accurate recall from participants in studies. This hinders research in this area because measurement error is likely to possibly underestimate the strength of observed relationships between physical activity and health, and weaken the effects of physical activity interventions.
Despite these measurement issues, there is substantial evidence that physical activity is protective for a number of chronic diseases, both independently and via its effects on weight gain and obesity. Greater physical activity is associated with less weight gain. Weight loss programmes that include a regular physical activity component are more effective at maintaining weight loss. It is likely that for many people, 45–60 minutes of moderate-intensity physical activity a day is necessary to prevent obesity.

Physical activity (independently) reduces the risk of type 2 diabetes by 33–50%. Those who are at high risk of type 2 diabetes (e.g. the obese and those with impaired glucose tolerance) can benefit most from physical activity.

Physical activity reduces the risk of cardiovascular disease in a dose-dependent manner. Benefits are seen with regular moderate-intensity physical activity, e.g. walking, but more intense exercise, e.g. running, carried out more often and for longer episodes can decrease risk even further.

Physical activity has been shown to reduce the risk of a number of cancers. It is well established that physical activity reduces the risk of colon cancer (especially in men) and breast cancer (especially in post-menopausal women). There is also consistent evidence that physical activity reduces the risk of lung and endometrial cancers and some indication that physical activity can reduce the risk of advanced prostate cancer.

In childhood, physical activity habits, particularly during growth periods including puberty, have a long-lasting effect on bone health. Weight-bearing and high impact activities, such as running or skipping, are most effective at increasing bone strength. In older adults, physical activity is important to counteract the age-related decrease in bone mass. Physical activity can decrease the risk of osteoporotic fractures in older people, particularly if the activity increases muscle strength, balance and co-ordination.

There is good evidence that physical inactivity increases the risk of clinical depression. There is also good evidence that physical activity has an important beneficial effect on anxiety. Furthermore, physical activity is important for psychological wellbeing and can be used as a means to improve mood and self-esteem.

It is clear that physical activity exerts its benefits throughout the life course. In childhood, physical activity is important as a means of maintaining energy balance and helping bone strength, and thus reduces the risk of chronic disease later in life. It is also important for social interaction, wellbeing and setting good lifestyle habits. It is recommended that children and young people achieve a total of at least 60 minutes of at least moderate-intensity physical activity each day. At least twice a week this should include activities to improve bone health (e.g. skipping, running), muscle strength and flexibility.

It is recommended that adults should achieve a total of at least 30 minutes of at least moderate-intensity physical activity each day, on five or more days a week. This level of physical activity should be maintained throughout adulthood in order to reduce the risk of chronic disease and should be continued into old age for as long as capabilities allow, in order to counteract the age-related losses in muscle and bone, deterioration of the cardiovascular system and to decrease the risk of osteoporotic fractures.

Widespread physical inactivity is a major public health problem and improving physical activity levels is crucial. This challenging situation is now well recognized by international and national health bodies. The World Health Organization (2004) has a global strategy on physical activity, and in England the Department of Health (2005) has a ‘Choosing Activity’ physical activity action plan. In the UK, the National Institute for Clinical Excellence (NICE) offers a range of guidance on the effectiveness of different methods of promoting physical activity, but current research is limited and it is hoped that ongoing work will provide more comprehensive guidance in the coming years.
There are a number of psychological barriers to physical activity, including issues related to body image, poor confidence and lack of immediate rewards. These barriers are often marked in those who are obese and need to lose weight. Most importantly, environmental factors which contribute to low levels of physical activity should be tackled if significant changes to population level physical activity are to be achieved. For example, policies which support active transport initiatives have proved to be effective in other countries and thus have great potential in the UK.

Further research to gain a greater understanding of the psychological and environmental barriers to increasing physical activity is likely to help direct more effective campaigns to promote physical activity in the future.