Part I Concepts for the development of physical activity practice

Part I consists of four chapters: Chapter 1 provides an introduction to physical activity promotion by presenting definitions, explanations and health promotion approaches to improving health. Chapter 2 presents a critical appraisal of health behaviour theory and provides a contemporary perspective for practice. In Chapter 3 the importance of policy and the political context of physical activity promotion is analysed. Chapter 4 concludes the section with an explanation of the process of evaluation to guide the reader through key principles of intervention evaluation.

1 Physical activity, health and health promotion

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Introduction

Physical activity research has clearly established the link between inactivity and poor health status in populations (United States Department of Health and Human Services, 1996; Department of Health, 2004 a,b,c; Department of Health, 2005). In addition, it is widely accepted that population physical activity levels in the UK are lower than that recommended for ensuring optimal health. Physical inactivity is becoming an issue of extreme public health importance to all health professionals and agencies within the UK, across Europe and in other Western industrialised countries. A range of global and international health policies outline the significance to public health of promoting healthy lifestyles in the twenty first century (Department of Health, 2004a, 2008; World Health Organisation [WHO], 2004; Wanless, 2004; Hillsdon *et al*., 2004). In the UK, physical activity is cited as a key intervention to tackle many health problems (Department of Health 2004a). The Department of Health has a joint public service agreement with the Treasury, the Department for Education and Skills and the Department for Culture Media and Sport (DCMS, 2002) to halt the year-on-year rise in obesity among children under 11 by 2010, in the context of a broader strategy to tackle obesity in the population as a whole (Dugdill and Stratton, 2007; Department of Health, 2008). In addition, the importance of physical activity as a risk factor for coronary heart disease is increasingly being recognised throughout Europe (Health Enhancing Physical Activity Guidelines [HEPA], 2000) and beyond (WHO, 2004).

Physical activity is a key component to maintaining a healthy lifestyle for all individuals. To assist in contextualising the significance of physical activity promotion to public health, this chapter outlines and considers definitions of health and health promotion, health trends, and current recommendations for physical activity within health promotion.

Learning outcomes

The aims of this chapter are to:

1. define concepts of physical activity, exercise, health and health promotion
2. introduce relevant policy drivers
3. describe current trends in physical activity participation
4. introduce concepts and determinants of health and health promotion
5. explain the public health importance of physical activity promotion
6. outline approaches to physical activity promotion in the UK

Defining exercise and physical activity

Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure (Caspersen *et al*., 1985). It has dimensions of 'volume (how much), duration (how long), frequency (how often), intensity (how hard) and mode (what type)' (Cale and Harris, 2005, p. 7). It is, therefore, a multi-faceted, complex and broad-ranging behaviour that may encompass activities of daily living (housework, gardening, stair climbing), occupation-related activity completed as part of one's job (walking, hauling, lifting and packing), transportation physical activity [walking, biking or wheeling (for wheelchair users), to and from places)] also known as active travel or transport, leisure time activity (exercise, sports recreation or hobbies), or engagement in specific prescribed interventions (Dugdill and Stratton, 2007). Exercise is considered a subset of physical activity which includes planned, structured, and repetitive bodily movement which is undertaken to improve or maintain one or more components of physical fitness (Casperson *et al*., 1985).

Understanding the political climate

In recent years, the Chief Medical Officer has collated and summarised the scientific evidence on the contribution of active living to promoting health and well-being across the lifespan (Department of Health, 2004b). Evidence suggests that increasing physical activity participation could significantly contribute to the prevention and management of over 20 diseases and conditions. In addition it is estimated that the cost of inactivity in England could be £8.2 billon annually (DCMS, 2002). In recent years various targets for increasing participation levels in sport and physical activity have been proposed. These include a target to increase participation levels to 70% of individuals undertaking 30 minutes of physical activity 5 days a week by 2020 (DCMS, 2002), and a less ambitious target of an increase in participation to 50% by 2020

(Wanless, 2004) (see also Chapters 3 and 6). Physical activity promotion was a key target of the Public Health White Paper Choosing Health: Making Healthier Choices Easier (Department of Health, 2004a). Furthermore, Choosing Activity: A Physical Activity Action Plan (Department of Health, 2005) outlined the action that needs to be taken in order to promote physical activity in the UK, and documents Government priorities for physical activity promotion in the form of cross-departmental Public Service Agreement Targets, which are:

> 'To halt the year-on-year increase in obesity among children under 11 by 2010, in the context of a broader strategy to tackle obesity in the population as a whole.
>
> By 2008, increase the uptake of cultural and sporting opportunities by adults and young people aged 16 and above from priority groups by increasing the number of people who participate in active sports, at least 12 times a year by 3% and increasing the number who engage in at least 30 minutes of moderate intensity level sport, at least 3 times a week by 3%.
>
> Enhance the take-up of sporting opportunities by 5–16 year olds so that the percentage of school children in England who spend a minimum of two hours each week on high quality PE and school sport, within and beyond the curriculum, increases from 25% in 2002 to 75% by 2006 and 85% by 2008 in England, and at least 75% in each school sport partnership by 2008'.
>
> (Department of Health, 2005, p. 7)

Physical activity prevalence and trends

Worldwide, 60% of the population are insufficiently active to benefit their health (WHO, 2004) and physical activity levels in the UK are exceptionally low (Department of Health, 2004b); e.g. only 21% of the adult population are regularly participating in sport or recreational activity (defined as taking part, on at least 3 days a week, in moderate intensity sport and active recreation, for at least 30 minutes continuously in any one session) (Sport England, 2006). Variation in participation exists according to demographic variables. More males (37%) than females (25%), residing within the UK, attain current recommended activity guidelines (Department of Health, 2004c), participation declines with age for both men and women and, compared with the general population, men from certain ethnic groups (Indian, Pakistani, Bangladeshi and Chinese) are less likely to meet physical activity recommendations (Department of Health, 2004c). According to the National Travel Survey (Department for Transport, 2001) between 1975–1976 and

1999–2001 average miles travelled by foot and bicycle had decreased by approximately 26%. In contrast, participation levels in selected leisure time physical activity such as walking, swimming and keep-fit/yoga were reported to have increased or at least remained the same between 1987 and 1996 (Department for Transport, 2001). In conclusion, therefore, over the past 20–30 years it seems that there has been a significant decrease in physical activity as part of daily routines and a small increase in activity during leisure time.

Health and health promotion

Health is a multidisciplinary concept, which encompasses states of both positive and negative well-being. Definitions of health arise from different perspectives, and as such, broad variations exist (Lucas and Lloyd, 2005). Historically, definitions have evolved with social change:

> 'The rising expectations of the past 150 years have led to a shift away from viewing health in terms of survival, through a phase of defining it in terms of freedom from disease, onward to an emphasis on an individuals ability to perform daily activities, and more recently to an emphasis on positive themes of happiness, social and emotional well-being, and quality of life'. (Lindau et al., 2003, p. 3)

In 1948 the World Health Organisation defined health as 'a complete state of physical, mental and social well-being, and not merely the absence of disease or infirmity' (cited in Nutbeam, 1998, p. 351). This definition encapsulates health as both a positive and holistic concept emphasising physical, mental and social elements. In contrast, biomedical models of health propose a negative definition, through which health is defined as freedom from disease, dysfunction or injury (Naidoo and Wills, 2000). In historical terms biomedical definitions of health were commonly adopted during the nineteenth and twentieth centuries, during which time the predominant focus of public health was to control disease and infection. Despite more recent acceptance of the holistic concept of health, arguably, the biomedical perspective remains the favoured definition adopted by health care professionals in the UK (Ewles and Simnett, 1999). In addition to biomedical and holistic approaches to defining health, Keleher and Murphy (2004) also outline sociological, socio-ecological, lay and health promotion approaches to understanding health.

The complexity of the concept of health is further evident when considering the various dimensions of health. Viewed from a holistic perspective, health can be experienced from a range of inter-related and interdependent dimensions, including physical, mental, emotional, social and spiritual (Ewles and Simnett, 1999), as such complex

states of health can co-exist. Physical and mental health, arguably the most commonly described dimensions of health, are concerned with the mechanistic function of the body and the ability to think clearly and coherently, respectively. Emotional and social health are closely related to mental health and refer to the ability to recognise emotions and the ability to make and maintain relationships. Spiritual health is concerned with feeling at peace with oneself and the quality of 'innermost' feelings.

Determinants of health

Health is shaped by multiple factors including personal lifestyle and the social, cultural and physical environment within which a person exists. The multi-layered model of factors determining health status (Dahlgren and Whitehead, 1991) represents the inter-related nature of the determinants of health (Figure 1.1). At the centre of the model are non-modifiable (fixed determinants) factors such as age, gender and genetics. Extending from the centre of the model are layers of influence that are potentially modifiable (variable determinants) by manipulation of either the environment or individual behaviour. The inner most layer represents individual lifestyle factors such as physical activity or dietary behaviour. Elements of the social environment include family structure and social networks and the final outer layer represents physical environmental conditions that have been linked to health,

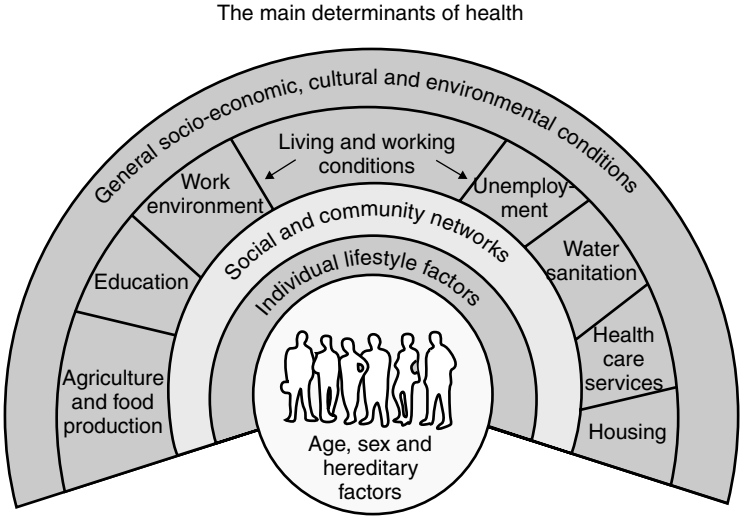

Figure 1.1 The social determinants of health as illustrated by Dahlgren and Whitehead (1991a,b). Reproduced with permission.

which include the provision of public services such as education, housing and healthcare. This model recognises the importance of the broader social, cultural and environmental determinants of health, and their inter-relationship with lifestyle choices of individuals.

Health and health promotion – an historical perspective

Expressed in terms of measurable biological outcomes, i.e. morbidity (disease) or mortality (death) rates, significant improvements in population health and well-being have been experienced. Such improvements have been attributed to rising standards of living (Department of Health, 2004a), advances in science, medicine and technology, and suppression of the incidences of infectious diseases, in developed countries (Naidoo and Wills, 2000). Over the last 50 years, global life expectancy at birth has increased by approximately 20 years, from 46.5 years in 1950 to 65.2 years in 2002 (WHO, 2003). In the UK, in 2004, female life expectancy was 81.1 years, for males 76.7 years (ONS, 2006). Increased life expectancy is not, however, synonymous with healthy life expectancy. Primarily as a consequence of non-communicable diseases individuals experience a significant number of unhealthy years at the end of life. Healthy life expectancy in the UK is currently 69.9 years and 67.1 years for females and males, respectively (ONS, 2006). In both developed and developing countries, non-communicable diseases represent 60% of the global disease burden (WHO, 2006). For example, circulatory diseases and cancer are the two most common causes of death and disability in the UK. Furthermore, coronary heart disease, diabetes and stroke are the most common illness to impair quality of life (ONS, 2006). In developed countries, therefore, a large proportion of illness and deaths can be attributed to a small number of lifestyle-behavioural risk factors, unhealthy diet, tobacco usage, physical inactivity and alcohol abuse (Wanless, 2004).

Health promotion has emerged as an increasingly important academic and professional multi-discipline (Ewles and Simnett, 1999). Measures designed to enhance health include health education (lifestyle and preventative) approaches alongside environmental (policy and fiscal) measures (Tones, 2001). The foundations of health promotion have emerged from the specialist areas of public health and health education (Edmonson and Kelleher, 2000). Public health is defined as 'the science and art of preventing disease, prolonging life and promoting health through the organised efforts of society' (Nutbeam, 1998, p. 352). In the nineteenth century, public health action was primarily concerned with the improvement of living conditions and infectious disease control with a focus upon better housing, education and sanitation. In contrast health education, when introduced in the 1960s, was

primarily concerned with individual responsibility for health and illness and arose as a result of increasing lifestyle related diseases and the subsequent requirement to convey information regarding personal health behaviours (Egger *et al*., 1999).

Health promotion emerged in an attempt to overcome the limited focus of both public health and health education on individual health behaviour, and recognised the importance of addressing environmental as well as individual (behavioural) determinants of health (Tones and Green, 2004). A wide range of actions constitutes the multi-disciplinary nature of health promotion practice (Rootman *et al*., 2001); and since its inception, broad ranges of health promotion definitions have emerged (Rootman *et al*., 2001). Explanations of health promotion action are underpinned by the different meanings attached to the concept of health, including considerations of the determinants of health (Naidoo and Wills, 2000). For example, WHO define health promotion as 'the process of enabling people to increase control over, and to improve, their health' (Ottawa Charter, 1986, p. 2).

Health promotion therefore includes the strengthening of individual capabilities to influence economic, societal and political actions in order to impact on public health (Naidoo and Wills, 2000). This is reflected in the Ottawa Charter (1986), a seminal document in the emergence and development of health promotion, which outlined five inter-related action areas for health promotion interventions, including: (1) building healthy public policy, (2) creating supportive environments, (3) strengthening community action, (4) developing personal skills and (5) reorienting health services.

The principles of, and strategies for health promotion can be applied to a variety of population groups (e.g. older people), risk factors (e.g. hyperlipidaemia), diseases (e.g. coronary heart disease) and settings (e.g. inner city areas) (O'Byrne, 2000). Over the past 10 years physical activity has become increasingly recognised as an activity that has positive health benefits in both treatment and prevention of ill health. As a consequence, physical activity exists within the context of health promotion and it is not unusual, for example for a primary care trust (PCT) to have a lead health professional, who has a remit for the strategic promotion of physical activity.

The role of physical activity in promoting health

The benefits of physical activity in health promotion and disease prevention are widely established and extensively documented (United States Department of Health and Human Services, 1996; Department of Health, 2004 a,b). Increasing levels of chronic, lifestyle-related diseases are causing concern for healthcare and other professionals in the UK

(National Institute of Health and Clinical Excellence [NICE], 2006). Furthermore, physical activity has a known positive relationship with these chronic conditions for prevention, treatment or in the management of diseases (Biddle *et al*., 2000; Department of Health, 2004a). There is considerable evidence to indicate that individuals who are more physically active suffer from reduced morbidity and mortality from a wide range of diseases. Adults who are physically active have a 20–30% reduced risk of premature death and up to 50% less chance of developing major chronic diseases (Department of Health, 2004a). The benefits of physical activity are also experienced across the life course. In children, engagement in physical activity results in amelioration of risk factors for disease (Department of Health, 2004a); and in adults, it provides protection against the diseases themselves. For both adults and children, participation in physical activity can result in improvements in musculoskeletal health and can have a significant impact upon mental well-being. Evidence (Department of Health, 2004a) outlines the beneficial effect of exercise in relation to approximately 20 specific diseases. In particular, physical activity has a key role to play in the prevention of coronary heart disease, type II diabetes, and various cancers, for example colon cancer, Furthermore, there is evidence of a dose–response relationship for such diseases (Department of Health, 2004a).

Recommendations for physical activity

Public health recommendations for health-related physical activity, in adults, is 30 minutes of at least moderate intensity physical activity a day, on 5 or more days per week (Department of Health, 2004a,b). This advice is outlined for general health benefits across a wide range of diseases (Department of Health, 2004a,b), and may be achieved through structured bouts of exercise, or alternatively through physical activity that is integrated into daily life. In addition, 30 minutes may be achieved in one complete session or alternatively through several shorter bouts of 10 minutes or more (Murphy *et al*., 2000). The aforementioned guidelines supplement the more vigorous exercise training–physical fitness (Haskell, 1994) guidelines of continuous aerobic activity, on 3–5 days per week at a vigorous intensity for 15–60 minutes per session (American College of Sports Medicine [ACSM], 1990).

ACSM (2007) have recently reviewed their guidelines for physical activity and public health and they currently recommend that healthy adults (under age 65) should participate in moderately intense cardio (aerobic) activity for at least 30 minutes a day, 5 days a week, or do vigorously intense cardio activity for 20 minutes a day, 3 days a week. In addition 8–10 strength training exercises should be performed, with 8–12 repetitions of each exercise, twice a week. The 30-minute

recommendation is for the average healthy adult to maintain health and reduce the risk for chronic disease; however, in order to lose weight or maintain weight loss, 60–90 minutes of physical activity may be necessary. ACSM explicitly state that 'The new recommendation emphasizes the important fact that physical activity above the recommended minimum amount provides even greater health benefits. The point of maximum benefit for most health benefits has not been established but likely varies with genetic endowment, age, sex, health status, body composition and other factors. Exceeding the minimum recommendation further reduces the risk of inactivity-related chronic disease' (2007).

ACSM (2007) physical activity guidelines for adults aged over 65 (or adults aged 50–64 with chronic conditions, such as arthritis) state that they should participate in moderately intense aerobic activity for at least 30 minutes a day, 5 days a week or do vigorously intense aerobic activity for 20 minutes a day, 3 days a week. In addition 8–10 strength training exercises should be performed, with 10–15 repetitions of each exercise, twice or thrice a week. Adults at risk of falling are recommended to perform balance exercises and develop a physical activity plan with the advice of a health professional. Strength training is recognised as being 'important for all adults, but especially so for older adults, as it prevents loss of muscle mass and bone, and is beneficial for functional health' (ACSM, 2007).

The decision to recommend moderate as opposed to vigorous intensity physical activity at a population level is twofold. Firstly, unacquainted vigorous physical activity is potentially hazardous for previously sedentary individuals, and secondly, from a behavioural perspective, it may be difficult to encourage a previously sedentary individual to engage in vigorous physical activity (Hardman and Stensel, 2003).

Although these broad recommendations are helpful, the recommended frequency, intensity and duration can be varied according to specifically desired health outcomes. Adult recommendations for health enhancing physical activities are appropriate for elderly individuals, with additional activities encouraged to promote strength, co-ordination and balance. Children are recommended to accumulate 60–90 minutes of daily moderate to vigorous physical activity and, in addition, participate in activities, twice weekly, that improve and maintain muscular strength, flexibility and bone health (Anderson *et al.*, 2006). However, despite this there is limited evidence regarding the dose–response relationship and specific health outcomes (Hardman and Stensel, 2003). For example, it is widely accepted that the aforementioned health-enhancing guidelines are insufficient in the prevention of weight gain or maintenance, and therefore, for obesity prevention it is recommended that adults participate in 45–60 minutes of at least moderate physical activity each day (Saris *et al.*, 2003).

Health promotion approaches to improving health and physical activity

In acknowledgment of the clearly established link between inactivity and poor health status in populations, physical activity promotion has been the target of health promotion interventions, strategies and actions. In order to effectively promote physical activity, it is necessary to have an appreciation of the factors that influence participation. Physical activity behaviour has been linked to an extensive range of correlates (Sallis and Owen, 1999; Sallis *et al.*, 2000). A review conducted by Sallis and Owen (1999) summarised approximately 300 studies of physical activity determinants, within which the following categories of determinants were proposed demographic and biological factors (e.g. age, education, gender, marital status, income); psychological, cognitive and emotional factors (e.g. attitudes, intention to exercise, self-efficacy, perceived health or fitness); behavioural attributes and skills (e.g. activity history during adulthood, type A behaviour pattern); social and cultural factors (e.g. group cohesion, physician influence, social support); physical environment factors (e.g. access to facilities) and physical activity characteristics (intensity, perceived effort). Correlates can, therefore, exist at the level of the individual or the environment (social or physical). Correlates associated with physical activity have been identified within all categories, the most consistent of which include enjoyment of exercise, self-efficacy, social support and perceived access to facilities. However, most research on the correlates of physical activity has focused upon individual level psychological and social variables (Gorely, 2005).

Knowledge of physical activity correlates is important since methods of physical activity promotion must be linked to explanations and understandings of factors that influence exercise behaviour. In this sense, unmodifiable correlates can be used to identify target populations who are least likely to engage in physical activity. Similarly, modifiable correlates can be used to identify specific strategies and actions that are used to intervene with such populations. Correlates can vary in strength in different population sub-groups and for different modes of physical activity, and therefore different intervention strategies must be used for different populations.

A broad range of approaches have been utilised to increase activity amongst different populations and in different settings. These include informational, behavioural/social and environmental/policy approaches (Kahn *et al.*, 2002). Interventions to promote physical activity have been variously described, in health promotion terms, such approaches can be broadly categorised as individualist or structuralist in nature (MacDonald and Bunton, 1992). The approach utilised will be dependent upon assumptions regarding the factors that influence physical activity behaviour (i.e. individual or environmental).

Individual approaches to physical activity promotion emphasise the importance of cognitive antecedents of behaviour change, and consequently focus upon understanding and modifying the psychology of the individual. Intervention strategies that are synonymous with such an approach focus upon individual behaviour change. Interventions are delivered in a structured format and typically involve face-to-face training or counselling by a health or fitness professional. Techniques to change behaviour may involve fitness testing, health risk assessments, health education and cognitive behavioural-change techniques such as self-monitoring, goal setting or decisional balance. Cognitive behavioural interventions are derived from theories that reflect psychology and social psychology. The most dominant theories that have been applied to the promotion of physical activity include Social Cognitive Theory (Bandura, 1986); Theory of Reasoned Action/Planned Behaviour (Fishbein and Azjen, 1975; Azjen, 1991); the Transtheoretical Model (Prochaska and DiClemente, 1983) and the Health Belief Model (Rosenstock, 1966). The aforementioned theories focus upon understanding cognitions as mediators of behaviour and behaviour change. Social Cognitive Theory and the Transtheoretical Model demonstrate the importance of self-efficacy to predicting behaviour change. The Theory of Reasoned Action proposes that exercise behaviour is predicted by intention to engage in such behaviour which is in turn is influenced by attitudes and social norms. The key components of such models are located at the level of the individual. This approach consequently leads to an individual approach to health promotion (Becker, 1992).

It has been suggested that behaviour change needs to take place at a societal level, as well as an individual level, and long-term patterns of healthy behaviour established if real health gains are to be experienced at a population level. Radical changes to the environment, both cultural and structural, may be required if significant shifts in population physical activity levels are to be achieved (Sallis and Owen, 1999). Socio-ecological models of health purport that health behaviours and health outcomes represent the result of the reciprocal relationship between individuals and their environments (Cohen *et al*., 2000; McLaren and Hawe, 2005). The general argument therefore is that environments restrict behaviour by promoting and demanding certain actions and discouraging or prohibiting other actions (Sallis *et al*., 1998). Such models are holistic and multi-level, that endeavour to understand behaviour at a variety of levels. Five levels of behavioural determinants are specified; these include intrapersonal factors, interpersonal processes, institutional factors, community factors, and public policy (McLeroy *et al*., 1988). In contrast to the individually orientated, structured approach of social cognitive models, ecological models of behaviour change endorse the use of environmental or policy approaches to

behaviour change (see also Chapter 2). Indeed, environmental approaches to public health promotion have proven successful in legislation for seat belt use and, more recently, tobacco control. However, such approaches have rarely been applied in chronic disease control and, in particular, the promotion of physical activity (Sallis *et al*., 1998).

Sallis and Owen (1999) have previously discussed the importance of the concept of socio-ecological models in understanding and promoting physical activity behaviour. Environmental interventions to promote physical activity must consider the influence of natural and constructed environments upon behavioural choice. In addition, policy interventions to promote physical activity may be related to incentives for activity (such as subsidised health club membership for employees) or resources and infrastructure for physical activity (such as provision of greater funding for walking and biking routes). Ecological models provide a general framework for explaining behaviour, and therefore this approach embraces models and theories that have focused upon individual level correlates of behaviour. Such models have moved the agenda for physical activity promotion away from a focus on individual behaviour change alone (which has had limited success) to a broader focus on the environmental structures and policies to promote physical activity. Socio-ecological approaches focus on the importance of the inter-connections between individuals, their environment and the subsequent impact on behaviour.

Physical activity promotion requires understanding of the scientific theory of exercise and health promotion from a multi-disciplinary (i.e. psychological, behavioural, social and physiological) perspective. Traditionally, health and physical activity research and practice have focused upon the natural science paradigm (e.g. physiological change of individuals) rather than social science paradigm (e.g. psychosocial factors such as social support) (Crone *et al*., 2004). This is reflected in the predominance of individualistic approaches to physical activity promotion that advocate the philosophy of individual responsibility for, and personal control over, health (King, 1991).

Despite the advantages of such approaches, (e.g. they provide a convenient method of physical activity promotion with a range of strategies available to health and exercise professionals), there is increasing recognition of the limitations, and large resource implications, of using such interventions alone in order to improve population physical activity levels. Individual approaches have been further criticised from a behavioural change perspective. Despite recognition of the value of regular physical activity amongst population groups, there is evidence to suggest that such positive beliefs do not translate into actual behaviour (Kearney *et al*., 1999). In response, multilevel (or socio-ecological) approaches, for example King (1991) and Figure 1.2, are increasingly being recognised as more appropriate in

Level of intervention	Channel (delivery mode)	Target group	Strategy
Personal	Face-to-face: physician's office; health clinic; health spas and clubs	Patients, clients	Information on health risk and benefits, counsellor support, personal monitoring and feedback, problem solving (relapse prevention)
	Mediated: telephone, mail etc.	As above	As above
Interpersonal	Classes, telephone/ mail, health spas and clubs, peer-led groups	Patients, healthy individuals, families, peers	Information; peer, family and counsellor support; group affiliation; personal or public monitoring and feedback; group problem solving.
Organisational/ environmental	Schools, worksites, neighbourhoods, community facilities (walk/bike paths), churches, community organisations, sites for activities of daily living (public stairs, shopping malls, car parks)	Students populations, employees, local residents, social norms	Curricula, point-of-choice education and prompts, organisational support, public feedback, incentives
Institutional/ legislative	Policies, laws, regulation	Broad spectrum of the community or population	Standardisation of exercise-related curricula, insurance incentives for regular exercisers, flexible work time to permit exercise, monetary incentives for the development of exercise facilities

Figure 1.2 King's socio-ecological model showing levels of intervention (taken from King, 1991, p. 247).

understanding behaviour change. Figure 1.2 considers four levels of intervention that may be considered when designing and implementing a physical activity programme ranging from those that focus at the level of the individual to those that focus at an environmental and legislative level. Action at all levels within the model is more likely to result in population-level behavioural change.

To date, research concerning the effectiveness of health promotion programmes has focused predominantly upon individual approaches (Hillsdon *et al.*, 2004) (see also Chapter 4). However, despite the popularity of individual approaches, in both research and applied terms, they appear to have been unsuccessful in halting trends towards

sedentary behaviour in the UK. The reasons for this are unclear; however, this may be as much to with the nature and transferability of research evidence as it is to do with the limitations of individual behaviour change techniques. For example, research evidence has tested the predictable power of cognitive variables upon physical activity behaviour; however, despite a strong relationship in terms of efficacy, there are problems when translating into practice (i.e. effectiveness). In future, the evaluation of physical activity will require an eclectic, portfolio approach to outcome measurement where wider aspects of health benefit, e.g. mental health, are recorded. The challenge for both researchers and practitioners is to measure real world physical activity behaviour and then appropriately translate research evidence into practice (Blamey and Mutrie, 2004).

Summary

Physical activity promotion has been identified as a public health priority for the twenty-first century (Department of Health, 2004a; WHO, 2004). Traditionally, biomedical models have predominated medical research, education and discourse in the UK (Suls and Rothman, 2004). This book aims to critically discuss physical activity promotion within a health promotion framework, in particular focusing on a socio-ecological approach. Because physical activity is a behavioural intervention or lifestyle choice, promoting it is a complex activity that requires input of many professional groups to achieve success (Hopman-Rock, 2000; McKenna and Riddoch, 2003; James and Johnston, 2004; Smith, 2004). Currently, there is a need to develop both theoretical and practitioner perspectives in order to improve the design, development, implementation and evaluation of physical activity interventions that are effective in sustaining behaviour change (McKay *et al*., 2003) within a variety of population groups. The following chapters will address many contemporary issues relevant to this debate.

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