Walking, transport and health: do we have the right prescription?

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SUMMARY
Encouraging people to walk more in their everyday lives in order to improve the health of a population is an area of policy intervention which is receiving increasing attention from practitioners and researchers. Most of the evidence for techniques that help the sedentary adopt physical activity comes from quasi-experimental and experimental intervention studies, many of which examine various cognitive and behavioural strategies at the individual level.

In comparison, interventions aimed at environmental, institutional and social levels remain largely unexplored. There is a need for more research on how to specifically target inactive subgroups at these levels. This paper discusses the commonalities between traffic reduction and health promotion strategies, which may be usefully employed to encourage walking for health in the UK. The authors conclude that there is growing evidence to suggest that motivational strategies alone are insufficient; greater emphasis needs to be placed on contextual environmental issues, and in particular, planning for walking as a mode of transport needs to be explored in greater detail.

Key words: physical activity; policy development; transport; walking

INTRODUCTION
The increasingly sedentary lifestyle of large sectors of the population in many developed countries, and the consequent decline in levels of physical activity has become a cause for concern (Department of Health, 1992; Bouchard et al., 1994). At the same time, there has been a growing recognition that reduced levels of physical activity can also be partly explained by the dominance of the car as a mode of transport in urban society, especially in the way in which it inhibits walking and cycling, particularly among young people (Hillman et al., 1991). Non-motorized forms of transport, in contrast, not only offer the potential to reduce environmental impact but also an effective way of encouraging active living. This paper discusses the extent to which sustainable transport strategies and physical activity promotion could be combined to produce a more effective ‘prescription’ for interventions designed to promote walking for health.

Despite the accumulating evidence for the beneficial effects of habitual physical activity on coronary heart disease, hypertension, osteoporosis, non-insulin-dependent diabetes, some cancers, stroke and depression (Bouchard et al., 1994; Morris, 1994; World Health Organisation/International Federation of Sports Medicine, 1995), it is estimated that 70% of the adult population of England do not take part in sufficient physical activity to achieve these health benefits (Health Education Authority & Sports Council, 1992).

Consequently, there have been calls to establish national targets for physical activity that will result in the maximum population health gains possible from increased physical activity. The
Department of Health has also published population guidelines for increasing physical activity, which recommend that, as a minimum, ‘every adult should accumulate 30 min or more of moderate intensity physical activity on most, preferably all days of the week’ (Department of Health, 1995). Walking, alongside other forms of physical activity, has repeatedly been cited as a particularly important mode of physical activity to achieve this aim (Sharp et al., 1995). Brisk walking (usually defined as 3.5–4.5 miles/h among the middle aged), meets the criteria of ‘moderate’ activity (Department of Health, 1995), and is often cited as ‘the most natural of all physical activities’ and ‘central to any strategy to increase physical activity’ (Sharp et al., 1995).

For the habitually sedentary, walking may serve as an ideal form of physical activity to initiate the required behaviour change for health benefit. Walking is a familiar weight-bearing activity, and the only sustained dynamic aerobic exercise that is common to everyone except the severely disabled or very frail. Unlike other forms of physical activity, walking is a year-round, readily repeatable, self-reinforcing, habit-forming activity, and the main option for increasing physical activity in sedentary populations (Morris and Hardman, 1997). Similarly, unlike other forms of physical activity where variations in participation according to sex, age, income, employment status and body mass are commonly reported, regular walking is practised across all of these groups (Siegal et al., 1995). Furthermore, recent reviews of the determinants of physical activity report fewer barriers to walking than other types of physical activity (Hovell et al., 1992).

Morris and Hardman (1997) further emphasized the centrality of walking in any strategy to increasing population physical activity levels by suggesting both ‘basic’ and ‘desirable’ walking targets, which draw upon current knowledge of the population levels of physical activity and fitness drawn from the Allied Dunbar National Fitness Survey (Health Education Authority & Sports Council, 1992). The ‘basic’ target was defined as:

middle-aged persons should be fit enough to walk 1.6 km at 4.8 km/h on the level without fatigue, sore muscles, sweating or uncomfortably fast breathing.

This level of physical activity has previously been described as ‘normal’ walking, and a pre-requisite for independent living and well-being.

The ‘desirable’ target was defined as:

middle-aged persons should be able to walk 1.6 km at 6.4 km/h on the level.

The Allied Dunbar National Fitness Survey (Health Education Authority & Sports Council, 1992) reported that those exceeding 70% of HRmax at either of the two targets described above could be classified as ‘unfit’. Above 70% of HRmax, adverse physiological symptoms appear and generally activities can not be sustained for prolonged periods. However, those who are sufficiently exercise trained, or habitually active at the recommended levels will not reach 70% HRmax at either of the two targets described above. These people can be regarded as ‘sufficiently active’ and ‘fit enough’ to have adequate health-related fitness reserves for everyday living and recreation, and are likely to already be enjoying the diverse health benefits of their activity. However, of the population surveyed in the Allied Dunbar National Survey (Health Education Authority & Sports Council, 1992), 64% of men and 76% of women were classified as either sedentary, or only moderately active on an irregular basis, while it is estimated that a mere 4% of women and 14% of men take part in sufficient physical activity to benefit their health.

Although there is a substantial body of evidence concerning the health benefits of physical activity and the low levels of physical activity in the population, far less is known about the effectiveness of strategies to achieve the increase in both individual and population levels of physical activity necessary to achieve both personal and public health benefits (Hillsdon et al., 1995). Furthermore, while there is increasing recognition and emphasis among health professionals and physical activity specialists that the greatest personal and public health gains will be achieved from moving the least fit or inactive to the next highest category of fitness or activity (Haskell, 1994), these are also the groups in society which have traditionally proven to be most resistant to change in physical activity behaviour.

At a time when interest in the field of health-related activity has focused on walking, there has also been a renewed interest in walking as a form of sustainable transport, particularly in relation to policy initiatives to reduce traffic in urban areas (Department of Environment and Transport, 1994). However, the challenge facing transport planners is similar to that of physical activity
specialists: the current population levels of walking in the UK are alarmingly low.

In terms of mileage, walking does not appear to be significant; approximating only 3% of total distance travelled. However, walking as a mode of transport does account for up to one-third of all journeys in Britain, and is most important in terms of short journeys (Figure 1).

Given that 75% of all journeys made are less than 8 km in length (Crampin, 1996), and 47% are less than 3.2 km, walking is a potentially important mode of transport within an urban context both in relation to targets to achieve active living and levels of traffic reduction. In terms of the shortest of journeys, walking becomes extremely important; it is estimated that for journeys less than 1.6 km, 82% are made on foot (Department of Transport, 1996), however, as the journey distance increases to 1.6–3.2 km, the proportion of such journeys made on foot then falls steeply to 24%.

One of the main problems facing practitioners wishing to promote ‘active living’ and walking for health benefit, is that there has been a gradual decline since the 1970s in walking in urban areas for everyday purposes, e.g. journeys to shops and the workplace. The average number of journeys made on foot per person per annum has gradually been decreasing since the 1970s and fell by 12% over the period 1985/1986 to 1993/1995. According to the National Travel Survey (1993/1995), walking on or by highways now accounts for only 29% of all journeys made. Furthermore, people are walking shorter distances, and hence the mileage walked per annum has declined by 18% during the same period. One estimate is that the average amount of walking per person per day is now only 0.5 mile (Crampin, 1996), and that longer walking trips, many of which were previously walking journeys to work, are declining faster than shorter trips. This is compared with travel by motorized vehicles, where the number of journeys has increased by 12% and distance travelled by 24% during the same period.

In sharp contrast to the decline in urban walking, of which 84% is for transport purposes, e.g. trips to school or shops, there has been a substantial increase in walking for recreational purposes, particularly in the countryside (Whitby, 1997). Overall, the number of recreational walking trips recorded in highway surveys increased by 6% between 1985/1986 and 1993/1995, however, this modest rise does not take into account the considerable growth in walking in the countryside, which is now the most important form of outdoor recreation (Office of Population Census and Surveys, 1995). Data on leisure-time walks, including country walks of greater than 3.2 km, published in the 1990 General Household Survey (Office of Population Census and Surveys, 1995), revealed an increase in leisure-time walks across all ages, social classes and genders between 1987 and 1993. Approximately half of the subjects in the survey walked continuously for at least 1 mile per year.

![Fig. 1: Journeys per person per year by mode: 1975/1976–1993/1995 (HMSO, 1996).](image-url)
that walking is simply taken for granted by transport planners because it is not a contributor to major problems, e.g. congestion or pollution. Transport policies have invariably encouraged the use of the car at the expense of non-motorized forms of transport, while dispersed land use policies have also increased the journey length necessary to achieve essential access from homes to shops, education and places of work. Add to this a decreasing demand for public transport, which tends to generate short walking trips to the bus stop or train station, and a decline in walking has been seen as almost ‘inevitable’ (Gunarson, 1995). At the same time, this lack of interest in walking among planners is increasingly reflected in the conspicuous absence of walking in transport policies (Goodman et al., 1998). However, more recent approaches to physical activity promotion have emphasized the importance of creating supportive environments alongside the development of personal skills (US Department of Health & Human Services, 1996).

Moreover, the changing nature of the built environment has been cited as a major reason for the decline in walking in urban areas. The walking environment is seen as less pleasant for pedestrians than other road users. Potential walkers are deterred by heavy traffic, excessive speeds or lack of crossing opportunities, except by subways or over-bridges which are unacceptable to many in terms of social safety (Hine, 1996). The condition of the pavement, dog fouling, litter and obstacles also combine to make walking less attractive (General Consumer Council, 1995; General Consumer Council for Northern Ireland, 1997). Furthermore, while in itself not an inherently dangerous form of transport, pedestrian casualties are unacceptably high, primarily because measures to calm traffic speeds have not been widespread (Preston, 1992).

A major, but less tangible, barrier to physical activity is the lifestyle adopted by many in developed societies. The term ‘car dependency’ (Transport Studies Unit, 1995) refers to the pervasiveness of the car in society. It is considered to be so widespread that it is a major barrier to increasing walking levels in society. Hallsworth et al. (1995), in explaining the extensive use of the car, argue that while people comprehend the arguments for traffic reduction, they do not accept a role or personal commitment to solving the problem. They have ‘no time’ to walk or cycle, they have no economic incentive to do so (Owen, 1998), and ‘pro-self’ commuters feel little personal
responsibility for congestion or pollution (Van Mught et al., 1995). It has also been suggested that both cycling, and walking for utilitarian purposes, carries with it a social stigma in the UK (Canter et al., 1997). In the face of these powerful societal inducements to be inactive, efforts are needed to encourage walking as part of usual daily activity, and create environments that afford the maximum opportunity to be active.

Walking, in contrast to many forms of physical activity, does not need specialized equipment, but it does require a safe environment in terms of social and physical safety. Securing the availability and accessibility of environments and facilities conducive to walking is central to ensuring that the population, or at least segments of the population, can act upon individual behavioural intentions to be active.

**Sustainable transport policies**

Nevertheless, what emerges from this discussion is a degree of scepticism that improved infrastructure for walking on its own is not sufficient to halt, or even stabilize a decline in walking:

Little investigative work has been done to examine the correlation between improvements to the walking environment and journey time and modal shift ... It seems likely, however, that improving the environment will encourage more walking, although the Cycle Route Demonstration Projects of the 1980s suggest that providing or improving facilities alone may be a necessary but insufficient strategy. Walking policy needs to be linked with sustainable travel policies. (SERPLAN, 1993)

Tolley (1997) describes sustainable transport policies which prioritize walking, cycling and public transport, while at the same time restricting use of the car as 'environmental traffic management'. He suggests that we need to adopt a holistic approach to management of streets for the benefit of residents, users and the environment. Thus, the concept embraces not only physical works, but also spatial, economic, legal, psychological and educational concepts within a policy framework.

There has been growing interest at a European level in developing this type of comprehensive and sustainable transport policy (Banister et al., 1995). One recent example is that of six major European cities: Athens, Barcelona, Florence, Lisbon, Oxford and Stockholm, which have joined forces to lead an initiative to permit only zero or low emission vehicles into their historic central cores. Known as the Alternative Traffic in Towns (Alter) programme, it aims to recruit 11 400 European cities with populations of over 100 000 into the project (Batchelor, 1998), with an ultimate aim of changing the transport priorities of municipalities across the European Union. One concomitant effect might be the creation of areas which are not only low emission zones, but also become highly accessible to non-motorized forms of transport as a consequence. In the UK, two major cities have recently moved towards adopting this type of strategy. They have devised transport policies which give priority to walking and cycling at the expense of motorized forms of transport. York, a historic city and major tourist destination in the north of England, has adopted a pedestrian route network which has increased the level of walking in the city during the past 5 years. For example, 13% of journeys to work are now on foot and 20% of residential streets have been subject to traffic calming. Priority has also been given to walking throughout the central core through a scheme known as ‘foot-streets’. Edinburgh, the capital of Scotland, has also reversed past policies in order to increase walking. These measures have included a pedestrian network; re-assessment of crossing points at road junctions; a pedestrian priority audit; space allocation; improved routes to transport interchanges; traffic calming and a high quality streetscape (Lothian Regional Council, 1995).

These city-based schemes demonstrate that it is possible to reverse past trends in walking habits within a city context. However, such examples are, in many urban areas, an exception to the rule.

**DISCUSSION**

It is apparent throughout that there are a number of possible common avenues for intervention among transport, health and community planners and physical activity specialists which could provide opportunities for halting the current decline in the level and pattern of walking, while simultaneously promoting the health benefits of this form of activity. The success of any strategy to improve levels of physical activity and therefore health will be dependent upon the extent to which it captures the imagination of the broadest spectrum of the population and encourages more active lifestyles. Those responsible for delivering physical activity and walking strategies, particularly at a local level, will need to take account of
a number of variables and factors including how much physical activity, if any, a person currently undertakes, and their aspirations, attitudes and perceptions towards physical activity and exercise. In addition, evidence from the more recent physical activity and transport literature would suggest that any such strategy must also consider ‘enabling policies’ which concentrate on improving the local environment (Ramsey, 1997).

A review of past interventions to promote walking for health indicate that any one given approach has undoubted benefits in terms of application within the context of the UK. There are, however, a number of potential and actual limitations. The major barrier to physical activity is the lifestyle choices we adopt which minimize physical activity. For example, leisure facilities, which are the fastest growing construction sector in the UK (Malkini, 1998), are increasingly designed on the assumption that people will use motorized transport to access them, in contrast to the design of many older town and suburban centres situated within walking distances of large concentrations of the population.

In the face of powerful societal inducements to be inactive, efforts must be made to encourage physical activity within the course of the day and to create environments in communities, schools and workplaces that afford maximum opportunity to be active.

While determined primarily within the framework of an overall traffic reduction policy, the potential health benefits of holistic ‘environmental traffic management’ have yet to be explored. In comparison, physical activity promotion schemes in the UK, and walking strategies, in particular, have to date been largely ‘self-contained behavioural interventions’ imposed on existing transport infrastructures.

When discussed in the context of the changing transport dimensions of an urban society, it is perhaps not surprising that individual interventions and motivational studies have only been partially successful. We can only expect an incremental gain given that walking *per se* has become increasingly less attractive in relation to the dominance of the motorized vehicle among urban streets. Thus, interventions to increase walking for health need to address the fundamental issue of car restraint and vice versa.

Potential frameworks for developing ‘walking for health’ and environmental traffic management strategies have been proposed previously (Department of Health, 1995; Environ/Transport 2000, 1996), however, there is now a growing consensus among practitioners, campaigners and researchers that the disparate threads of strategy in these two areas of work need to be brought together within an overall developmental framework which acknowledges and exploits the commonalities in approaches, methodology and philosophy between them. Such a framework is presented in Figure 2.

Health promoters are well placed to stimulate and support the changes required to develop the framework presented into a reality. The experience health promoters have gained through years of intersectoral collaboration and healthy alliance working on, e.g. Local Agenda 21 initiatives and Healthy City Projects, provides them with valuable insight into potential methods for bringing health and transport organizations and policies together. The core skills of health promotion; influencing and developing policy and legislation; the reorientation of organizations and services; advocacy and lobbying; creating awareness; and mobilizing, empowering and enabling individuals, communities and organizations provide a range of practical methods, familiar to the health promotion profession, for working with and across disparate sectors to achieve improvements in health.

**CONCLUSION**

The low levels of walking in the population provide a major opportunity for increasing population levels of physical activity and health enhancement. This has stimulated an interest in bringing together policy interventions which are designed to encourage more people to walk as part of a daily routine and at the same time meet the objectives of health promotion. Approaches thus far have tended to be particularistic and highlight a need to examine future interventions for their strategic rather than simple tactical objectives, and to ensure that a multi-faceted approach to both construction and implementation is adopted.

However, a major issue remains: i.e. whether the declining trend in walking can be reversed given the perceived personal and societal barriers, rigid sectional policy frameworks and lack of infrastructure which currently mitigates against adopting walking for health. There is some evidence to suggest that there has been some convergence between health promotion policy
Fig. 2: Walking, transport and health: a developmental framework.
and sustainable transport development (Davies, 1997). For example, the local authority-based Travelwise campaign now emphasizes healthy living as well as environmental improvements as consequences of traffic reduction. Nevertheless, interventions have invariably prioritized cycling and use of public transport as alternatives to the car, and walking has remained peripheral rather than integral to such campaigns. The challenge which those promoting ‘walking for health’ face is to bring together the plethora of small-scale, short-term physical activity promotion schemes into mainstream sustainable transport development. An overall developmental framework outlined above could be adopted, e.g. within the Local Agenda 21 initiative, or longer-term approaches which embrace local cultural dimensions, intersectoral provision of facilities, accessibility issues and land use planning. This framework, however, demands a ‘reorientation’ in thinking about current policy.

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