



## CYCLING AND HEALTH

This briefing outlines the following topic areas:

1. Growing health concerns
2. Cycling as a solution to improving health
3. Individual health benefits from cycling
4. Wider benefits of cycling to society
5. Risks associated with cycling

A modal shift from motorised transport to cycling could have significant public health benefits. Increased cycling has the potential to directly improve the health of the individual, in terms of fitness, reduced risk of certain diseases, self-esteem, longevity and quality of life, whilst also indirectly improving the health of society as a whole by reducing atmospheric and noise pollution (Shayler *et al.*, 1993; I-ce, 2000; BMA, 1992) and reducing road danger. For the individual, cycling is an excellent way to develop physical fitness and reduce the risk of health problems. There is a need to raise awareness of the health consequences of individual travel choices and of policies on transport and land-use planning.

### **1. Health is of growing concern in many countries:**

- People living in affluent countries particularly do not take enough exercise and lead relatively sedentary lifestyles: “obesity rates have increased in all OECD countries over the past two decades due to poor eating habits and lack of physical activity... more than 20% of people in Mexico, the United Kingdom and Australia are now considered obese” (OECD, 2003).
- There has been an increase in obesity in the developed world, this alarming escalation in the levels of obesity amongst children and adults is adding to the costs of healthcare (National Audit Office, 2000).
- At least 60% of the global population fails to achieve the minimum recommendation of 30 minutes moderate intensity activity daily (WHO, 2003).
- Overall physical inactivity was estimated to cause 1.9 million deaths globally in 2002 (WHO, 2002b).
- The decline in physical activity has impacted negatively upon public health (Cavill and Davis, 2003). Physical activity is clearly connected with reduced rates of death and ill health from various causes (US Department of Health and Human Services, 1996).



- Particular groups are more at risk from illness, for example, older people and men under 30 in lower income groups experience the greatest combination of disease risk factors and hence it is important for their future health that they engage in physical activity (Pearce *et al.*, 1998).
- For many young people the opportunities to be physically active as part of daily life are becoming increasingly restricted due to parental concerns over safety (European Heart Network, 2001).
- The World Health Organisation recommends at least 30 minutes of daily moderate intensity physical activity, whilst for young people (2-16 years) an hour is recommended (WHO, 2002a).

## **2. Cycling is one of the solutions to improving health:**

- Cycling is a simple, convenient, yet effective way of incorporating exercise into everyday life (Pearce *et al.*, 1998; DfT, 1999). It is likely to be much more sustainable than targeted exercise initiatives in encouraging individual behavioural change in the long-term. Cycling has a functional role which means that it does not rely wholly on self-motivation. It also allows independent travel for children, which is critical for their development (Hillman, 1992).
- Cycling can not only reduce road congestion and air pollution but can also contribute to higher levels of physical activity (Haines *et al.*, 2000). Over half of the daily trips that are made by people are short in distance and therefore provide an opportunity to undertake physical activity that is both accessible and free (Dora, 1999).
- The World Health Organisation (1999) has recognised the importance of cycling in achieving greater sustainability and mobility and improving public health (WHO, 1999 in Cavill and Davis, 2003).
- “Cycling is a good way of getting enough exercise and the most efficient way of doing so” (I-cce, 2000). Indeed, in comparison to other common exercising activities, cycling is perhaps one of the most ideal forms of exercise which could contribute to health (Morris, 1991, p.14 in CTC, 1991). Cycling may also delay the ageing process by extending mobility later into life and gaining valuable life years (Shayler *et al.*, 1993).
- Cycling is a non-weight bearing form of aerobic exercise and does not tend to strain muscles, joints, limbs or ligaments whilst still providing the benefits of improved fitness and stamina (Hillman, 1992), it avoids problems that are often associated with activities such as running.
- “Improving health is one of the main things that motivates people to try cycling” (National Cycling Strategy, 2003). People who used to cycle may consider it many years later as a way of improving fitness, losing weight, getting exercise.



### 3. Individual health benefits from cycling:

- There are numerous health benefits that cycling can offer the individual including:
  - Regular exercise reduces the risk of all-cause mortality (overall risk of dying prematurely from any cause). The Copenhagen Heart Study observed that cycling to work decreased the risk of dying by approximately 40% (Andersen *et al.*, 2000).
  - Reducing the risk of cardiovascular disease (CVD), the main forms of which are coronary heart disease and strokes (British Heart Foundation, 2000). The World Health Organisation's Global Burden of Disease Study (Murray and Lopez, 1996) highlights that cardiovascular disease is the main cause of death in Europe (accounting for 49% of all deaths) and also years lost due to early death. It states that an average of 31% of all years of life is lost due to CVD in developed market economies. CVD is common, but largely preventable. An inactive individual has approximately double the risk of getting coronary heart disease than someone who is active (Cavill and Davis, 2003).
  - Compared with those who do not cycle, cyclists who cover at least 40 kilometres each week can halve their risk of heart disease (Morris *et al.*, 1990).
  - Estimates have been made that indicate that 36% of all coronary heart disease can be attributed to lack of physical activity (National Cycling Strategy, 2003).
  - Reducing the risk of respiratory diseases, high blood pressure, strokes, non-insulin dependent diabetes and some cancers (especially of the colon) (VNG *et al.*, 2000). Physical activity has been shown to have a protective effect on colon cancer, with an average risk reduction of 40-50% (Lee and Blair, 2002).
  - A lack of physical exercise can increase the risk of developing type-two (adult onset diabetes) diabetes by up to 50%. An overall reduced risk of dying from cancer can also be associated with physical inactivity. Notable evidence of this exists for cancer of the colon (National Cycling Strategy, 2003).
  - Helping build and maintain healthy bones, muscles and joints and reducing the risk of falls, fractures and injuries through improved strength and co-ordination (National Cycling Strategy, 2003). Cycling also increases leg strength and bone density (which offsets osteoporosis) (Hillman, 1992; Cavill and Davis, 2003).
  - Reducing body fat and the risk of weight problems and obesity (Pearce *et al.* 1998; National Cycling Strategy, 2003). Cycling in the Netherlands is thought to be a significant contributory factor in the Dutch being closer to their ideal body weight compared with individuals in the rest of Europe (I-ce, 2000). Between 10% and 20% of Europe's population are classed as obese (IOTF, 2003) with some countries having experienced a tripling of levels of obesity in the last 20 years (WHO, 2002b).



- Improving psychological and mental wellbeing and self-esteem as well as reducing the risk of stress, depression and anxiety (National Cycling Forum 1999; DETR 1999; Pearce *et al.* 1998; Shayler *et al.*, 1993; Cavill and Davis, 2003; National Cycling Strategy, 2003).
- The focus is on a moderate intensity of physical activity (National Cycling Strategy, 2003).

#### **4. Wider benefits of cycling to society:**

It is not only the individual, but also the wider public that benefits from cycling and the reduced adverse impacts associated with motor traffic, as the following examples show:

##### *Fewer burdens on society:*

- Life-long cycling may benefit individuals by reducing health costs incurred due to medical treatment and absenteeism caused by illness from lack of exercise (VNG *et al.*, 2000). If one third of all short car journeys were made by bike in the UK, heart disease rates could drop by 5-10% and in doing so, could save the National Health Service (NHS) approximately £50 million (€7.5 million approximately) annually (CTC, 1991).

##### *Better air quality and noise pollution:*

- An increased level of cycling could have a major beneficial impact upon public health through the reduction in the use of motorised transport; one of the main sources of atmospheric and noise pollution. "Millions of Europeans live in air pollution severe enough to cause each year thousands of premature deaths and many more chronically ill and disabled" (World Health Organisation, 1990 in CTC, 1991). Cycling is a pollution-free, environmentally sustainable mode of transport (Cavill and Davis, 2003).

##### *Improved road safety:*

- The National Cycling Strategy (2003) states that reducing the level of motorised traffic can help to improve levels of road safety for pedestrians and cyclists.

##### *Minimising social exclusion:*

- Through a reduction in motorised traffic levels, the general accessibility of areas for all can be improved. (National Cycling Strategy, 2003).

#### **5. Risk of cycling:**

- Above all, it is critical to focus on creating an environment where people feel safe to cycle, through measures such as reduced traffic speed and provision of a well-planned cycle infrastructure. In doing this, some of the risks associated with cycling can be minimised and this will help to ensure that people who try cycling will continue throughout their lives.



- Fear of safety can act as a major disincentive in encouraging people to cycle. The British Medical Association maintains however, that the benefits of cycling are likely to outweigh casualties from accidents (National Cycling Strategy, 2003). In countries such as the Netherlands and Denmark which have seen an increase in the levels of cycling, there has been a corresponding decrease in casualty rates per mile as the roads have become safer.
- There is an inevitable likelihood that unintended consequences of cycling will happen, e.g. falling off bicycles. However, the benefits of public health are likely to outweigh these risks.
- “Dr Mayer Hillman calculated that, [in the UK, where there is a high accident rate among cyclists], life years gained by cycling outweigh life years lost in accidents by 20 to 1” (cited in Baden *et al.*, 1998). The health benefits of cycling outweigh the possible extra accident risk.

Cycling “is one of most efficient and cost effective ways of securing an improvement in public health” (Shayler *et al.*, 1993). Efforts must be made to ensure the development of a “public health policy that builds transport into its design and of a transport policy that sets out to improve health” (Whitelegg, 1993). The promotion of cycling has the potential to help achieve policy objectives on health (as well as the environment, economy and energy saving), whilst simultaneously providing a sustainable and efficient mode of transport (Hillman 1992; CTC 1991; Pearce *et al.*, 1998). For both health and transportation issues therefore, it is in society’s interest to promote cycling. In particular, there is significant potential for cycling to help tackle the root *causes* of ill health. The majority of people are relatively conscious of the health effects of lack of fitness, but have either not contemplated, or are reluctant to contemplate, cycling to work or school to get fit. Efforts must focus on promoting this and attempting to change this behaviour (Pearce *et al.*, 1998).

Efforts must also be made to ensure that once exercise is undertaken, it is constantly maintained. Research has shown that even a small amount of cycling can lead to significant fitness gains but that upon stopping, this gain is rapidly reversed and hence retention must be guaranteed to ensure long-term health benefits (DETR, 1999).

**Cycling is “health promotion at its best” (Oja and Vuori, 2000).**

**Other Relevant Briefings:**

- Cycling and Economics
- Cycling and Safety
- Cycling and Promotion



**References:**

- Andersen L.B., Schnohr P., Schroll M. and Hein H.O. (2000) All-cause mortality associated with physical activity during leisure time, work, sports and cycling to work. *Archives of Internal Medicine*. 160, pp. 1621-1628.
- Baden, U., Poulsen, E., Godefrooij, T., Resinger, H. and Daniel Eritja. (1998) *Improving Bicycle Safety: without making helmet-use compulsory*. European Cyclists' Federation, Brussels.
- British Medical Association (1992). *Cycling: Towards Health and Safety*. Oxford University Press, Oxford.
- Cavill, N. and Davis, A. (2003). *Cycling and Health: A Briefing Paper for the Regional Cycling Development Team*. Commissioned by AEA Technology, 28 February 2003.
- CTC (1991) *Bikes not fumes: the emissions and health benefits of a modal shift from motor vehicles to cycling*. CTC, Godalming, UK.
- DETR, 1999. *Cycling for Better Health*. Traffic Advisory Leaflets 12/99.
- Dora, 1999. A different route to health: Implications of transport policies. *British Medical Journal*, 318, pp. 1686-1689.
- European Commission EC (1999) *Cycling: the way ahead for towns and cities*. Prepared by Dekoster, J. and Schollaert, K. with contributions from Bochu, C. (DGXI), Lepelletier (DG VII), and Coppieters, M.C. (ECF). Office of Official Publications of the European Communities, Luxembourg.
- European Heart Network (2001) *Children and Young People – the Importance of Physical Activity*. At <http://www.ehnheart.org/pdf/phyactivity.pdf>
- Haines, A., McMichael, T., Anderson, R. and Houghton, J. (2000). Fossil fuels, transport and public health. *British Medical Journal*, 321, pp. 1168-1169
- Hillman, M. (1992) *Cycling and the promotion of health*. Proceedings of Seminar B held at the PTRC European Transport, Highways and Planning 20<sup>th</sup> Summer Annual Meeting (September 14-18 1992). Umist. Vol. p.354. PTRC Education and Research Services Ltd.
- Interface for Cycling Expertise (I-ce) (2000) in association with the Habitat Platform Foundation, (2000) *The Economic Significance of Cycling: A study to illustrate the costs and benefits of cycling policy*. VNG uitgeverij. The Hague, Netherlands.
- International Obesity Task Force (IOTF) (2003) *Incidence prevalence and co-morbidity*. At [www.ionf.org/](http://www.ionf.org/)
- Lee, C.D. and Blair, S.N. (2002) Cardiorespiratory fitness and stroke mortality in men. *Med Sci Sports Exerc* 2002, 34, pp. 592-595.



Morris, J.N., Clayton, D.G., Everitt, M.G., Semmence A.M. and Burgess, E.H. Exercise in leisure time: coronary attack and death rates. *British Heart Journal* 1990, 63, pp. 325-334.

Murray, J.L. and Lopez, A.D. (1996). *The Global Burden of Disease*. World Health Organisation, Geneva.

National Cycling Forum (1999) *Promoting Cycling: Improving Health*. National Cycling Strategy.

National Cycling Strategy (2003) *Cycling and Health*. March 2003.

National Audit Office (2000) *Tackling Obesity in England*. London

Oja, P., Vuori, I. (2000) *Promotion of Transport Walking and Cycling in Europe: Strategy Directions*. The European Network for Promotion of Health-Enhancing Physical Activity.

Osborne, P. (1998) *Cycling, Road Safety and Sustainability*. Proceedings of Seminar J and K. Traffic Management and Road Safety. PTRC European Transport Conference. 14-18 September 1998. Vol. P. 428. PTRC Education and Research Seminars Ltd.

Pearce, L.M., Davis, A.L., Crombie, H.D. and Boyd, H.N. (1998) *Cycling for a Healthier Nation*. TRL report 346, TRL, Transport Research Foundation Group of Companies.

Shayler, M., Fergusson, M and Rowell, A (1993) *Costing the Benefits: the value of cycling*. A report for the Cyclist's Touring Club, CTC, Godalming, UK.

U.S. Department of Health and Human Services (1996) *Physical activity and health: a report of the Surgeon General Atlanta, GA*, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Centre for Chronic Disease Prevention and Health Promotion.

Whitelegg, J. (1993) *Transport for a Sustainable Future: The Case for Europe*. Belhaven Press, London.

World Health Organisation (WHO) (2002a) *"Move For Health": World Health Day*. At [http://www.who.int/archives/world-health-day/euro\\_factsheet.pdf](http://www.who.int/archives/world-health-day/euro_factsheet.pdf)

World Health Organisation (WHO) (2002b) *The World Health Report: Reducing Risks, Promoting Healthy Life*. WHO, Geneva

World Health Organisation (WHO) (2003) *Physical Activity Fact sheet*. At [http://www.who.int/hpr/NPH/docs/gs\\_physical\\_activity.pdf](http://www.who.int/hpr/NPH/docs/gs_physical_activity.pdf)