

Young People

Related academic evidence

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Sustrans makes smarter travel choices possible, desirable and inevitable. We're a leading UK charity enabling people to travel by foot, bike or public transport for more of the journeys we make every day. We work with families, communities, policy-makers and partner organisations so that people are able to choose healthier, cleaner and cheaper journeys, with better places and spaces to move through and live in.

It's time we all began making smarter travel choices. Make your move and support Sustrans today.
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Introduction

This document provides a summary of how the work that Sustrans carries out on a day-to-day basis is supported by the findings of academic articles. More specifically, this document is a literature review undertaken in the context of projects with young people, which aim to increase levels of physical activity by encouraging more active forms of transportation, such as walking and cycling.

For more detail on Sustrans projects with young people, see the associated pages of the Sustrans website - <http://www.sustrans.org.uk/what-we-do>. For more information on the monitoring and evaluation of projects with young people, please contact monitoring@sustrans.org.uk.

Secondary Evidence in Support of Sustrans' Projects for Young People

The monitoring and evaluation of Sustrans' school travel programmes has demonstrated that our schemes successfully increase levels of active travel to school through encouraging and enabling children to walk and cycle. The distinctive value of our school programmes is supported by secondary evidence in both academic and policy literature. This document summarises some of the key secondary evidence in support of active travel in childhood, focusing on the health, sustainability, educational attainment and personal development benefits.

Travelling actively to school by walking or cycling constitutes a form of physical activity, and physical activity in turn can help encourage healthy growth and development, maintain a healthy weight (see below for more information), reduce anxiety and stress, and improve muscular strength, endurance and flexibility in children and adolescents¹. It can also increase bone mineralisation by up to 15%, reducing the risk of osteoporotic fractures in later life². Moreover, active children are more likely to become active adults³, avoiding the serious health impacts of physically inactive lifestyles which are linked to 22-23% of coronary heart disease, 16-17% of colon cancer, 15% of diabetes, 12-13% of strokes and 11% of breast cancer⁴. Current government guidelines recommend at least 60 minutes and up to several hours of moderate to vigorous intensity physical activity every day for 5 to 18 year olds. Suggested activities include active travel – brisk walking and cycling at a low speed constitute moderate intensity physical activity, while cycling at a higher speed constitutes vigorous intensity activity⁵. However, the Health Survey for England 2008 found that amongst two to 15 year olds, only 32% of boys and 24% of girls met the minimum recommendation⁶.

As outlined above, children who incorporate physical activity such as walking and cycling into their daily life can prevent weight gain⁷ and reduce their risk of becoming overweight and obese⁹. This is a substantial benefit of physical activity and warrants further discussion. Studies show that moderate intensity aerobic exercise such as walking and cycling can reduce body fat in overweight children

¹ British Heart Foundation (BHF) (2007) Healthy Schools Physical Activity Booklet A

² Department of Health (2009) 'Moving to Nature's Cure' in *Annual Report of the Chief Medical Officer*, p21-30

³ BHF (2009) Couch Kids: The Nation's Future

⁴ World Health Organisation (WHO) (2002) The World Health Report 2002 – Reducing Risks, Promoting Healthy Life

⁵ Department of Health (2011), *Start Active, Stay Active*, (online), accessed 14.07.2011

⁶ http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_128210.pdf

⁷ The NHS Information Centre for Health and Social Care (2010) Statistics on obesity, physical activity and diet: England 2010

⁸ Di Pietro, L. (1999) 'Physical activity in the prevention of obesity: current evidence and research issues', *Medicine and Science in Sports and Exercise*, 31:542-546

⁹ Drøyvold, W.B., Holmen, J., Midthjell, K., Lydersen, S. (2004) 'BMI change and leisure time physical activity (LTPA): an 11-y follow-up study in apparently healthy men aged 20-69y with normal weight at baseline', *International Journal of Obesity*, 28: 410-417

⁹ WHO (2000) 'IV Addressing the problem of overweight and obesity' in *Obesity, preventing and managing the global epidemic. Report of a WHO consultation on obesity*, p181

independently of diet intervention¹⁰. The 2009 Health Survey for England found that from 1995 to 2009 the prevalence of obesity increased from 11% to 16% among boys and from 12% to 15% among girls aged two to 15¹², while the National Child Measurement Programme reports nearly a quarter of Reception-aged children and a third of children in Year 6 as either overweight or obese¹³. Being overweight or obese in childhood can have immediate health consequences including breathing difficulties, increased risk of fractures, hypertension, early markers of cardiovascular disease, insulin resistance and adverse psychological effects¹⁴. In the long term, obese children are more likely to become obese adults¹⁵, for whom life expectancy is reduced by approximately seven years¹⁶ and the associated health risks are well documented¹⁷. Moreover, being overweight in adolescence predicts a broad range of adverse health effects independent of adult weight¹⁸ and follow up studies show that adults who were obese as children have an increased mortality risk¹⁹. Obesity is also strongly associated with disability and restricted mobility²⁰, and Peterson *et al* found that the higher a person's BMI the more likely they are to be inactive²¹. Therefore, reducing child obesity can not only reduce the short and long term health problems directly associated with the condition but can also enable children to enjoy more physically active lifestyles.

Integrating walking and cycling into daily life through active travel may be particularly effective in increasing levels of physical activity - a systematic review of 150 studies published over the past 25 years found that time spent outdoors was the most common environmental correlate with higher levels of physical activity in children²². Davison *et al* found that children who use active forms of transport to school such as walking and cycling accumulate approximately 20 additional minutes of moderate to vigorous physical activity per day on weekdays than children who are driven to school²³. Further, research shows that children and adolescents who walk or cycle to school are more likely to meet physical activity recommendations than children who travel to school by car or bus²⁴.

¹⁰ Goran, M.I., Reynolds, K.D., Lindquist, C.H. (2009) 'Role of physical activity in the prevention of obesity in children', *International Journal of Obesity*, 23, 3:18-33

¹¹ Strong, W.B., Malina, R.M., Blimkie, C.J.R., Daniels, S.R., Dishman, R.K., Gutin, B., Hergenroeder, A.C., Must, A., Nixon, P.A., Pivarnik, J.M., Rowland, T., Trost, S., Trudeau, F., (2005) 'Evidence Based Physical Activity for School-age Youth', *Journal of Pediatrics*, 146(6):732-737

¹² NHS Information Centre for Health and Social Care: Health Survey for England (2009) 'Obesity among children' in *Health and lifestyles: Summary of key findings*, p15-16

¹³ The NHS Information Centre for Health and Social Care (2010) National Child Measurement Programme: England 2009/10 school year

¹⁴ WHO (2011) 'Obesity and Overweight Factsheet no.311' (online), accessed 28.04.11

<<http://www.who.int/mediacentre/factsheets/fs311/en/>>

¹⁵ Reilly, J.J., Methven, E., McDowell, Z.C., Hacking, B., Alexander, D., Stewart, L., Kelnar C.J.H. (2003) 'Health consequences of obesity', *Archives of Disease in Childhood*, 88:748-752

¹⁶ Peeters A., Barendregt J.J., Willekens, F., Mackenbach, J.P., Al Mamun, A. (2003) 'Obesity in adulthood and its consequences for life expectancy: a life-table analysis', *Annals of Internal Medicine*, 138:24-32

¹⁷ WHO (2009) Global health risks: mortality and burden of disease attributable to selected major risks

¹⁸ Must, A., Jacques, P.F., Dallal, G.E., Bajema, C.J., Dietz, W.H. (1992) 'Long-term morbidity and mortality of overweight adolescents', *New England Journal of Medicine*, 327:1350-1355.

¹⁹ Gunnell, D.J., Frankel, S.J., Nanchahal, K., Peters, T.J., Davey-Smith, G. (1998) 'Childhood obesity and adult cardiovascular mortality: a 57 year follow up study based on the Boyd-Orr cohort', *American Journal of Clinical Nutrition*, 67:1111-1118

²⁰ Larrieu, S., Peres, K., Letenneur, L., Berr, C., Dartigues, J.F., Ritchie, K., Février, B., Alperovitch, A., Barberger-Gateau, P. (2004) 'Relationship between body mass index and different domains of disability in older persons: the 3C study', *International Journal of Obesity*, 28:1555-1560

²¹ Peterson, L., Schnor, P., Sorenson, T.I.A. (2004) 'Longitudinal study of the long-term relationship between physical activity and obesity in adults', *International Journal of Obesity*, 28:105-112

²² Ferreira, I., van der Horst, K., Wendel-Vos, W., Kremers, S., van Lenthe, F. J., Brug, J. (2006) 'Environmental correlates of physical activity in youth - a review and update', *Obesity Reviews*, 8:129-154

²³ Davison, K.K., Werder, J.L., Lawson, C.T. (2008) 'Children's active commuting to school: current knowledge and future directions', *Preventing Chronic Disease*, 5(3):A100

²⁴ Cooper, R.A., Andersen, L.B., Wedderkopp, N., Page, A.S., and Froberg, K. (2005) 'Physical Activity Levels of Children Who Walk, Cycle, or Are Driven to School', *American Journal of Preventive Medicine*, 29(3):179-184

Physical activity can also psychologically benefit children - Williamson *et al* found that 15 minute bouts of aerobic exercise led to significant increases in positive mood and significant decreases in negative mood amongst 9 and 10 year olds²⁵. As walking and cycling help to prevent child obesity, they also prevent the associated adverse psychological effects: obese children are more likely to experience psychological or psychiatric problems than children who are not obese²⁶. Aside from the health benefits, cycling provides an enjoyable and happy experience for children – a recent study showed that 89% of children described cycling as ‘fun’ and 44% thought it was ‘exciting’²⁷.

Travelling actively to school also benefits the environment. Between 1990 and 2006, emissions from school travel increased by 59%, the largest percentage increase within the overall carbon footprint for UK schools²⁸. In 2009, 51% of 5-16 year olds used motorised travel as their main means of getting to and from school²⁹ and the morning school run accounted for 21% of car trips in urban areas at peak time³⁰. Though the average school journey is just 1.6 miles for children of primary school-age and 3.4 miles for 11-16 year olds³¹, car engines use more fuel driving at peak times in urban areas as a result of stopping, starting and queuing. This in turn produces more CO₂, the most significant of the greenhouse gases contributing to climate change³².

In line with the 2008 Climate Change Act, schools were set the target of reducing travel emission levels by 34% for 2020, with particular emphasis on increasing walking and cycling to and from school as sustainable, low carbon alternatives³³. The benefits of sustainable travel are well recognised: early positive results of the Sustainable Travel Demonstration Towns and Cycling Demonstration Towns projects included reduced congestion, better quality of life, improved air quality, health benefits, and carbon savings³⁴. In his 2009 Annual Report the Chief Medical Officer called for an eight-fold increase in cycling, describing walking and cycling for a greater proportion of journeys as a ‘win-win’ action both to slow climate change and substantially improve health³⁵.

There is evidence to suggest that students who walk or cycle to school perform better academically - Sibley and Etnier concluded that there is a positive relationship between physical activity and cognitive performance³⁶ and a one off study by Hillman *et al* found that 9 year olds improved their academic performance, particularly reading achievement, after 20 minutes of walking³⁷. Cycling or walking to and from school can also improve the quality of children’s sleep, helping them to function better. Nixon *et al* found that higher levels of daytime physical activity in children were associated with longer sleep duration and shorter periods of sleep latency – conversely time spent in sedentary activity was associated with long periods of sleep latency and shorter sleep duration, which is linked

²⁵ Williamson, D., Dewey, A., Steinberg, H. (2001) ‘Mood Change Through Physical Exercise in Nine- to Ten-Year-Old Children’, *Perceptual & Motor Skills*, 93(1):311-316

²⁶ NHS Information Centre for Health and Social Care: Health Survey for England (2009) ‘Obesity among children’ in *Volume 1: Health and lifestyles*, p187-199

²⁷ Ipsos MORI (2010) Research to explore perceptions and experiences of Bikeability training amongst parents and children

²⁸ Department for children, schools and families (2010) Climate change and schools: A carbon management strategy for the school sector

²⁹ Department for Transport (DfT) National Travel Survey (2010) ‘Trips to and from school per child per year by main mode: Great Britain, 1995/97 to 2009’ (online), accessed 27.04.11 <<http://www.dft.gov.uk/pgr/statistics/datatablespublications/nts/age-school/nts0613.xls>>

³⁰ DfT National Travel Survey (2010) ‘Cars taking children (aged 5-16) to school in urban areas during term time: Great Britain, 1995/97 to 2009’ (online), accessed 27.04.11 <<http://www.dft.gov.uk/pgr/statistics/datatablespublications/nts/age-school/nts0615.xls>>

³¹ Office for National Statistics (February 2010) ‘Travel to school’ (online), accessed 28.04.11 <<http://www.statistics.gov.uk/cci/nugget.asp?id=1576>>

³² Directgov (May 2010) ‘Car fuel and emissions information’ (online), accessed 27.04.11 <<http://carfueldata.direct.gov.uk/additional/may2010/VCA-Booklet-text-May-2010.pdf>>

³³ Department for children, schools and families (2010) Climate change and schools: A carbon management strategy for the school sector

³⁴ DfT (2009) Delivering Sustainable Low Carbon Travel: an essential guide for local authorities

³⁵ Department of Health, (2009) ‘Climate Change and Health’ in *Annual Report of the Chief Medical Officer*, p55-63

³⁶ Sibley, B.A., Etnier, J.L. (2003) ‘The relationship between physical activity and cognition in children: A meta-analysis’, *Pediatric Exercise Science*, 15:243-256

³⁷ Hillman, C.H., Pontifex, M.B., Raine, L.B., Castelli, D.M., Hall, E.E., Kramer, A.F. (2009) ‘The effect of acute treadmill walking on cognitive control and academic achievement in preadolescent children’, *Neuroscience*, 159:1044–1054

to obesity and lower cognitive performance³⁸. Taylor *et al* found that the more contact children with Attention Deficit Disorder had with their natural environment, the higher they scored in concentration and self-discipline tests and highlighted the implications this could have for all children³⁹. Further, cycling and walking to school can prevent obesity in young people which has been found to have adverse effects on social and economic outcomes in young adulthood, such as educational attainment and income⁴⁰.

Travelling actively can also benefit children's development more generally - research conducted by Living Streets suggests that children who walk to school develop better spatial awareness and more road sense than children who are driven to school⁴¹. Therefore, walking or cycling to school could represent an important step in preparing young children for independent travel: parents accompany 84% of 7-10 year olds and 30% of 11-13 year olds to school in the UK, primarily because of traffic danger fears⁴² and just 16% of 7-10 year olds are allowed to cross roads alone compared with 74% of 11-13 year olds⁴³. Increasing the confidence of parents in their child's road safety skills has the potential to improve parent-child relationships regarding travel choices - a systematic review of attitudes towards cycling found that despite children expressing responsible attitudes towards transport choices, 'parental responses emphasised children's safety at the expense of developing their independence'⁴⁴. Further, there is consistent evidence to show motorists are less likely to collide with pedestrians and cyclists if more people walk or cycle⁴⁵. Consequently, programmes which increase the number of children who walk and cycle to school represent an effective strategy for altering motorist behaviour, improving road safety and reducing the risk of accidents around our schools.

³⁸ Nixon, G.M., Thompson, J.M.D., Han, D.Y., Becroft, D.M.O., Clark, P.M., Robinson, E., Waldie, K.E., Wild, C.J., Black, P.N., Mitchell, E.A. (2009) 'Falling asleep: the determinants of sleep latency', *Archives of Disease in Childhood*, 94(9):686-689

³⁹ Taylor, A.F., Kuo, F.E., Sullivan, W.C. (2001) 'Coping with ADD: The Surprising Connection to Green Play Settings', *Environment and Behavior*, 33(1):54-77

⁴⁰ NHS Information Centre for Health and Social Care: Health Survey for England (2009) 'Obesity among children' in *Volume 1: Health and lifestyles*, p187-199

⁴¹ Living Streets (2008) *Backseat Children: how our car dependent culture compromises safety on our streets*

⁴² DfT National Travel Survey (2010) 'Whether children (aged 7-13) are accompanied to school by an adult and the reasons: Great Britain, 2002 to 2009' (online), accessed 03.05.11

<<http://www.dft.gov.uk/pgr/statistics/datatablespublications/nts/age-children/nts0616.xls>>

⁴³ DfT National Travel Survey (2010) 'Whether children (aged 7-13) are allowed to cross roads alone: Great Britain 2002 to 2009' (online), accessed 03.05.11.

<<http://www.dft.gov.uk/pgr/statistics/datatablespublications/nts/age-children/nts0618.xls>>

⁴⁴ Lorenc, T., Brunton, G., Oliver, S., Oliver, K., Oakley, A. (2008) 'Attitudes to walking and cycling among children, young people and parents: a systematic review', *Journal of Epidemiology & Community Health*, 62:852-857

⁴⁵ Jacobson, P. L. (2003) 'Safety in numbers: more walkers and bicyclists, safer walking and bicycling', *Injury Prevention*, 9:205-209