

<b>Institution: University of Bristol</b>
<b>Unit of Assessment:</b> 26 - Sport and Exercise Sciences, Leisure and Tourism
<b>Title of case study:</b> Changing policy and practice to increase active travel to school
<p><b>1. Summary of the impact</b></p> <p>In May 2012 the UK Chief Medical Officer (CMO) convened a specialist group of 20 academics to discuss a solution to the “population-level lack of physical activity”. The group, including Professor Ashley Cooper, concluded that increasing active travel (walking or cycling) to destinations such as work or school is the best option for achieving this aim and encouraged the CMO to embed this in future policy initiatives. Children are a major focus of such initiatives, since the majority of UK children are not sufficiently active to meet current health guidelines, and over the past decade active travel to school has been recognised as a major opportunity for children to achieve healthy levels of physical activity. This case study describes a programme of funded [6,7] research work which has directly informed and underpinned understanding of the importance of active travel to school by policy makers and public health practitioners. The research is heavily cited in policy and planning documents from 2009 to the present date, both in the UK and internationally, and is used by organisations which implement interventions to increase active travel in the UK and internationally. Via these routes this work has benefitted children in many countries through increased physical activity, higher fitness and improved health.</p> <p><b>2. Underpinning research</b></p> <p>The research underpinning this case study is a body of published work [1-5] investigating children’s active travel to school led by Ashley Cooper (Lecturer/Senior Lecturer in Exercise and Health Sciences, 1997-2008, Reader in Exercise and Health Science, 2008-2011, Professor of Physical Activity and Public Health, 2011 to present) and Angie Page (Lecturer/Senior Lecturer in Exercise and Health Sciences, 1994-2011, Reader in Exercise and Health Science, 2011 to present) since 1998. The work has been conducted both Nationally and Internationally and was stimulated by a 1998 UK Government White Paper on transport which stated that “<i>Not walking or cycling to school means that children get much less exercise.....</i>”. They identified that there were no data that supported this assertion, and that whilst intuitively true, alternatively children could compensate for the “effort” of walking to school by lower physical activity elsewhere during the day. They used newly developed instruments (accelerometers) which provide an objective measure of the level and pattern of children’s physical activity to address this issue. They published the first study worldwide to use innovative time-patterning of accelerometer data in 2003, showing active travel to school to be an important contributor to daily physical activity in a sample of Bristol children [1]. Children who walked to school were significantly more physically active than those travelling by car, and time-patterning showed that the differences occurred during morning and afternoon commuting times, suggesting that it is the journey to/from school that is important. This paper was the first to use this methodology and is highly cited.</p> <p>To confirm these observations and to extend the work to include cycling, Cooper &amp; Page used their involvement as originators in the European Youth Heart Study (EYHS) to explore the physical activity levels of children travelling to school by foot, car and bicycle in Odense, Denmark, working with Prof L.B.Andersen (an acknowledged world leader in the field) in the University of Southern Denmark. Similar to the UK, they found that children who walked to school were more active than car travellers, with cyclists at an intermediate level due to the limited ability of accelerometers to accurately measure physical activity whilst cycling [2]. These data have also been highly cited. Cycling is the most common form of travel to school in Denmark, and to further explore its contribution to health they compared the fitness levels of children by how they travelled to school, finding that cyclists were significantly fitter (8%) than both walkers and car travellers. These were the first data to describe the physical fitness of children by mode of travel to school and to identify higher fitness in cyclists [3]. To confirm that the association with fitness was not self-selection (i.e. fitter children choose to cycle) they utilised the longitudinal nature of the EYHS data showing that children who did not cycle to school when 9yrs old, but had changed to cycling by 15yrs old, increased fitness, whilst those who did not cycle were unchanged [4]. This international work has</p>

continued, showing that children who cycle to school have a better cardiovascular risk factor profile than non-cyclists. Importantly, those who changed from non-cycling at 9yrs to cycling by age 15yrs are also healthier, demonstrating the importance of cycling to school for children's health.

Cooper and Page extended this work within the UK in the PEACH project [7] by employing innovative methodology. Combining accelerometer and GPS data they visualised journeys to and from school in a Geographical Information System, allowing activity in these journeys to be accurately quantified, a method called spatial segmentation. They have published unique papers using this method to describe the contribution of walking to school to overall moderate to vigorous physical activity (MVPA) and hence to meeting health guidelines for children [5]. They have extended this method to study adults [8], showing that walking to work is an important contributor to adult physical activity.

In summary, Cooper and Page have conducted an ongoing programme of work over the past 12 years, supported by five inter-related grants from highly competitive funding agencies (MRC (National Prevention Research Initiative), World Cancer Research Fund, NIHR) which has provided original and unique data describing the role of active commuting in children's physical activity and health. They were the first to use objective measures of physical activity to show the importance of active travel to overall physical activity, a study that has been replicated many times in different countries and contexts. Their papers are highly cited, were included in the Centres submission to RAE 2008 [1-3] where the Centre was ranked third (UoA 46), and have been widely incorporated into policy documents and guidance.

### 3. References to the research

#### Publications in peer reviewed journals

[1] Cooper AR, Page AS, Foster LJ, Qahwaji D. (2003). Commuting to school. Are children who walk more physically active? *American Journal of Preventive Medicine*; 25: 273-276. doi: 10.1016/S0749-3797(03)00205-8. **181 citations**

[2] Cooper AR, Andersen LB, Wedderkopp N, Page AS, Froberg K. (2005). Physical activity levels of children who walk, cycle or are driven to school. *American Journal of Preventive Medicine*; 29: 179-184. doi: 10.1016/j.amepre.2005.05.009. **142 citations**

[3] Cooper AR, Wedderkopp N, Wang H, Andersen LB, Froberg K, Page AS. (2006). Active travel to school and cardiovascular fitness in Danish children and adolescents. *Medicine and Science in Sport and Exercise*; 38(10): 1724-1731. doi: 10.1249/01.mss.0000229570.02037.1d. **91 citations**

[4] Cooper AR, Wedderkopp N, Jago R, Kristensen PL, Moller NC, Froberg K, Page AS, Andersen LB. (2008). Longitudinal association between cycling to school and adolescent fitness. *Preventive Medicine*; 47(3):324-8. doi: 10.1016/j.ypmed.2008.06.009. **41 citations**

[5] Cooper AR, Page AS, Wheeler BW, Griew P, Davis L, Hillsdon M, Jago R. (2010). Mapping the walk to school using accelerometry combined with GPS. *American Journal of Preventive Medicine* 38(2):178-183. doi: 10.1016/j.amepre.2009.10.036. **31 citations**

**Journal ranking:** AJPM 18/151 (Medicine, General and Internal); MSSE 3/83 (sports Science); Prev Med 20/151 (Medicine, General and Internal). Citations at November 2013.

#### Research grants

[6] **Health Education Authority.** "Development of physical activity measurement in young people". 1.5 years from 03/05/99. £53,698. Page (PI), Cooper, Fox.

[7] **The PEACH project:** Personal and Environmental Associations with Children's Health. Three grants:

**National Prevention Research Initiative** (administered through the MRC). "Environmental determinants of physical activity and obesity in adolescents" £243,850. 3 years from 1/5/06.

## Impact case study (REF3b)

Cooper (PI), Page, Fox, Hillsdon (then at Bristol), Jago.

**World Cancer Research Fund.** "Personal and Environmental Determinants of Eating Behaviours and Obesity in Adolescents (PEACHEB)". £143,893. 3 years from 1/11/07. Cooper (PI), Page, Jago, Hillsdon, Thomspson.

**World Cancer Research Fund.** "PEACH: Personal and Environmental Determinants of Children's Health" £246,051. 3.5 years from 1/11/10. Cooper (PI), Page, Jago, Thompson.

[8] **National Institute for Health Research (PHR).** "Employer schemes to encourage walking to work: feasibility study incorporating an exploratory randomised controlled trial". £286,000. 27 months from 1/10/11. Audrey (PI; UoB), Cooper.

#### 4. Details of the impact

This body of work has been pivotal in the implementation of local, national and international active travel policies for children. These policies have led to increases in active travel among children. As active travel has been associated with improved health and is a sustainable form of physical activity these policies will deliver both physical and mental health benefits for beneficiaries in both the short and longer term. Three broad pathways demonstrate the impact of the research:

##### A) UK Public Health Guidance

The research led to Cooper being invited to sit on the Programme Development Group (PDG) for development of National Institute for Health and Clinical Excellence (NICE; now National Institute for Health and Care Excellence) Public Health Guidance for increasing children and young people's physical activity. The guidance was published in January 2009 [a]. His invitation was a direct result of his leadership in research demonstrating the potential for active travel to school to increase children's overall physical activity. The guidance is intended for implementation by a wide range of deliverers from national and high level policy and strategy through to local strategic planning, local organisations (planning, delivery and training) and local practitioners (delivery) (guidance pg7). The recommendations are aimed at a wide range of organisations and groups, including children's trusts and services, community and voluntary groups, early years providers, Government departments, local authorities, parents, families and carers and schools and colleges (guidance pg 9) with the beneficiaries being pre-school and school-age children and young people. Cooper contributed expert opinion on academic research into active travel to school in the development of these guidelines. The PDG produced 15 recommendations, of which two were specifically about active travel (Rec5: Local Transport Plans: "*Transport plans should aim to increase the number of children and young people who regularly walk, cycle and use other modes of physically active travel*"; Rec12: Active and Sustainable School Travel Plans: that school leaders should "*encourage a culture of physically active travel (such as walking or cycling)*". The guidance is ubiquitous in regional and national strategic plans to improve children's health (Section 4B); however NICE do not collect evidence of impact.

##### B) International and National Policy impact

The research of Cooper and Page, and resulting NICE public health guidance, has been cited in many regional, national and international policy documents. For example, in County Durham the guidance is cited in the interim cycling strategy 2009-2012 [b] which led to the FEAT 1st (Families Enjoying Active Travel) pilot project. This measured the effects of encouraging more physically active travel by supporting daily journeys to school on foot and by bike and was a collaboration between North Tyneside Council and the transport charity Sustrans (with whom Cooper & Page work (Section 4C)). The project resulted in an increase in active travel to school and an almost doubling of children's physical activity [c], and is now being rolled out across schools in Tyne and Wear. **Nationally**, they are cited in the policy documents of organisations promoting active travel (e.g. the Cycle Touring Club ("*Cycle-friendly schools and colleges*" briefing 7c (July 2012)) and Sustrans [d], and more broadly health (British Medical Association; "*Healthy Transport=Healthy Lives*" (July 2012)). **Internationally**, they are cited in policy documents from several countries including Australia, USA, New Zealand, Denmark and Ireland. For example, In the USA four of their studies are cited in "*Active School Travel: A Resource Binder for Redwood City Community*

*Members to Implement Walk and Bike to School Programs*” [e]. This document describes how to implement active travel to school interventions and provides many examples of success, such as in Marin County where there has been a 64% increase in the number of students walking to school and a 114% increase in the number of children bicycling to school (page 29). They also provide three of twenty references in a policy document from the US National Center for Safe Routes to School [f] which informed the White House “*Task Force on Childhood Obesity: Report to the President*” [g] where their work is cited twice (of four references) supporting the role of active travel for obesity prevention. This action plan provides 70 specific recommendations of which five relate to active travel (5.8 to 5.12) including that “*Active transport should be encouraged between homes, schools, and community destinations.....*”. These recommendations were enacted rapidly by US Federal agencies, with the Department for Transportation initiating National Bike to School day in 2012, which in 2013 had 1705 schools participate across all states of the USA.

### **C) Working with national and international health promotion groups to deliver direct benefits to beneficiaries**

Cooper & Page work directly with national and international organisations to achieve increases in active travel among children. **In the UK** they work closely with Sustrans in supporting active travel to school programmes such as Safe Routes to Schools and Bike It by providing both the evidence base from their research and expert guidance that they provide directly to the organisation. The Sustrans programmes are highly effective at increasing active travel. For example, in 2011, work with 340,000 pupils in 1,400 schools resulted in an 80% increase in the number of children regularly cycling to school. Philip Insall (Sustrans Director, Health) has written “*their research provides important support for us and helps steer and ensure the success of our work*” [h]. **In Denmark** their work is represented on the National Board of Health by Prof. Andersen and integrated into recommendations (“*Physical activity in prevention and treatment of common diseases*”), targeted for GPs and other health professionals. Their research informs the work of TrygFonden, a not-for-profit Foundation supporting action-orientated, knowledge-based projects that contribute to increased safety, and where active transport in children is a primary focus. For example, in 2010 The All Kids Bikes campaign engaged 143,000 children across Denmark in cycling to school on as many days as possible, and a recent intervention in almost 2000 children in 24 schools in Odense increased the proportion of children cycling to school every day by 8.9% (report in review by Danish Cycling Federation/TrygFonden).

In summary, their work provides the evidence base to support an extensive range of interventions to increase active travel to school, is cited widely in policy and planning documents, and is used by agencies implementing these policies. It should be noted that the policy documents for these interventions are not extensive reviews of the literature – rather they include a few examples of authoritative research which has driven the field. The implementation of school active travel interventions will increase the physical activity of children with consequent health benefits and are also likely to have environmental and economic benefit to society, through reducing car use and lowering carbon emissions.

### **5. Sources to corroborate the impact**

[a] National Institute for Health and Clinical Excellence (2009). *NICE public health guidance 17. Promoting physical activity, active play and sport for pre-school and school-age children and young people in family, pre-school, school and community settings*. ISBN 1-84629-872-5 (Cooper listed as member of Programme Development Group on page 54 of guidance).

[b] County Durham Interim Cycling Strategy (2009-11).

[c] Sustrans: FEAT 1<sup>st</sup> – a summary report (2011).

[d] Sustrans: Young People: Related academic evidence (2011).

[e] Active Travel Toolkit - Redwood City: “*Active School Travel: A Resource Binder for Redwood City Community Members to Implement Walk and Bike to School Programs*” (2009).

[f] Safe Routes to School and Health (2010).

[g] White House Task Force on Childhood Obesity: Report to the President: “Solving the problem of childhood obesity within a generation” 2010. Reference 321, Page 80.

[h] Letter from P. Insall, Director, Health, Sustrans.