

Active Commuting to School

An Overlooked Source of Childrens' Physical Activity?

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Abstract

The assessment and promotion of childrens' healthful physical activity is important: (i) to combat the international obesity epidemic that extends to childhood; and (ii) to establish an early habit of lifestyle physical activity that can be sustained into adolescence and adulthood. The primary focus of both assessment and promotion efforts has been on in-school physical education classes and, to a lesser extent, out-of-school structured exercise, sport and play. A potential source of continuous moderate activity, active commuting to school by means of walking or by bicycle, has been largely ignored in surveys of physical activity. Suggestive evidence of steep declines in the amount of childrens' destination walking can be gleaned from national transportation surveys. At the same time, there has been a dramatic increase in the reported use of motorised vehicles, including the use for chauffeuring children. There is very little evidence to support or refute active commuting to school as an important source of childrens' physical activity; however, this is largely because it has been overlooked in the stampede to assess time in more vigorous activities.

The promotion of active commuting to school must be considered in the context of parents' real and perceived concerns for their childrens' personal and pedestrian safety. We certainly do not have a full understanding at this time of all the factors related to decisions about transportation mode, whether by child, parent, community, or school. Such information is necessary if successful and sustainable interventions can be implemented, important transport policy decisions can be made, and community and school designs can be modified. Practice rarely waits for research, however, and there are numerous examples of innovative programming, policies and environmental designs occurring internationally that can serve as natural experiments for enterprising researchers willing to push the envelope of our understanding of active commuting and childrens' physical activity. Since we know so little, there is much to learn.

The multiple benefits of regular physical activity for adults are well known. Similar benefits for children are generally accepted.^[11] While chronic disease is not prevalent among children, the obvious immediate benefit of physical activity is the prevention and treatment of childhood obesity. There has been a universal interest in the assessment and promotion of childrens' physical activity as researchers worldwide repeatedly document evidence of increasing obesity in children,^[2,3] concurrent with decreasing fitness.^[4,5]

School physical education programmes have been traditionally viewed as a primary source of children's physical activity.^[6] There is evidence to suggest, however, that actual time in moderate to vigorous physical activity amounts to <20% of class time;^[7] a 40 minute class time translates to only 8 minutes of healthful activity. Outside of school, the focus of physical activity assessment has been on participation in structured and vigorous activities, including exercise, games and sport. Self-report instruments designed to collect time in these types of activities notoriously over-estimate children's physical activity compared with either objective monitoring or observation.^[8] Similar to what has been observed in school physical education classes, children report time as a structured activity from beginning to end (e.g. 45-minute basketball league, 60 minutes playing hopscotch before supper) with little attention to actual active time. To the contrary, we know that childrens' moderate and vigorous activity patterns are naturally sporadic, interspersed with periods of rest.^[8] Therefore, much shorter accumulations of healthful activity undertaken in the course of in-school physical education classes and out-of-school recreation are more likely the case.

1. Active Commuting to School as a Source of Physical Activity

Although a potential source of continuous moderate to vigorous intensity activity, the mode of childrens' transportation, both to and from school and to other destinations, has been largely ignored in population surveys of childrens' physical activity. Transportation modes typically include passive (e.g.

busing, riding in a private vehicle) and active (e.g. walking, bicycling) commuting. What meager evidence exists suggests a chilling picture. In the UK, the prevalence of children walking to school dropped almost 20% from 1970 to 1991.^[9] Sleaf and Warburton^[10] reported that 50% of British children aged 4 to 11 years were driven less than a mile to school on a regular basis, a distance short enough to be easily walked. In the US, there has been an increase in the use of personal vehicles for transportation purposes, including chauffeuring children.^[11] From 1977 to 1995, there was a 37% decline in the number of trips made by children by foot or by bicycle.^[12]

It is little surprise that such an avenue of study of childrens' physical activity has been left unexplored in societies dominated by motor vehicle transportation: the question is silly in the context of prevalent busing and chauffeuring practices. A recent analysis of a representative household survey in Russia (unpublished observations), a society where car ownership is rare compared with Western standards, demonstrated that children's active commuting to school (specifically by walking) was the primary source of physical activity, accounting for 40 to 50% of total physical activity time (minutes/week). No similar study exists at this time in other child populations.

2. Health Benefits of Active Commuting

At this time we have little evidence to conclude whether or not active commuting to school is a healthful source of physical activity for children.^[10] Turning to the adult literature, a recent prospective study of over 30 000 men and women has shown that bicycling to work decreased risk of all-cause mortality approximately 40%, even after adjustment for leisure-time physical activity.^[13] Walking to work may also contribute significantly to total daily activity in populations where occupational activity is minimal. For example, in Japan, physicians regularly advise businessmen to walk to work as a manner of increasing total daily physical activity.^[14] In a prospective study based on such practices, the authors showed that greater reported time spent

walking to work (independent of leisure-time activities) decreased risk of hypertension in working Japanese men.^[14] Intervention studies in working populations have demonstrated the efficacy and cost efficiency of promoting active commuting to work with regards to health and fitness outcomes.^[15,16]

We are aware of no published studies at the present time examining the impact of a programme of regular walking or bicycling, outside structured physical education classes, on any of the accepted indicators of health and fitness in children. As others have pointed out,^[17] walking at any intensity expends energy. Therefore, a programme of frequent walking (or bicycling), regardless of destination, is likely to be important in preventing and treating childhood obesity. We are left, however, with little evidence to support childrens' practice of active commuting to school. Such studies are imperative from a public health promotion perspective.

3. Active Commuting as a Behaviour

From a behavioural perspective, there is an assumption that lifelong patterns of physical activity are established in childhood.^[18,19] Others have expressed the sentiment that children accustomed to being driven even short distances will likely not come to appreciate the benefits of lifestyle activity as an adult.^[9,10,20] In support of this postulate, empirical evidence indicates that inactive behaviours adopted in childhood track better than active behaviours through the transition from adolescence to young adulthood.^[21] Furthermore, inactive behaviours are related to childrens' obesity in both cross-sectional and prospective study designs.^[22,23] Reducing inactive behaviours is a successful approach to preventing childhood obesity.^[24,25] Logic suggests that promoting commuting practices to school not only reduces an inactive behaviour (passive commuting), but replaces it with a moderate intensity activity (active commuting).

Understanding the determinants of childrens' physical activity is necessary in order to develop effective interventions. Determinants research has relied upon the same physical activity assessment approaches and methods used in epidemiological

research. It is therefore not surprising that many of the evidence-based correlates of childrens' activity (such as physical activity preferences, intention to be active and programme/facility access) are logically related to participation in structured exercise, games and sport.^[26] Hillman^[9] demonstrated that British childrens' freedom to move about unchaperoned, or their 'independent mobility,' declined dramatically over almost 20 years, and presented evidence that girls' independent mobility is even more restricted than boys'. There is concern that the increasing restriction of childrens' independent mobility may delay emotional maturity.^[27] At this time we know very little about the correlates and antecedents related to choice of transportation mode, whether by child, parent, community or school.

4. Ramifications of Such an Approach

Morris and Hardman^[17] produced an excellent review of the benefits of walking for all ages. They also must be commended for their balanced presentation; additional concerns that must be considered before universally promoting active commuting to school include pedestrian safety amidst traffic, air pollution, and sidewalk and road maintenance. We shall add crime and overall community and school design to the list. The promotion of active commuting to school must be considered in the context of parents' real and perceived concerns for childrens' personal and pedestrian safety.^[27] For example, in the US, newer schools are more isolated from the communities they serve, often separated by busy thoroughfares, and possess no safe direct pedestrian routes.^[12] Schools appear to be increasingly built with attention more to vehicle routing efficiency than to pedestrian safety. Furthermore, falling prey to bullying is a concern both children and parents share.^[27]

Obviously, the relative benefits of childrens' active commuting to school must be carefully weighed against each of these health, safety and economic concerns, not to mention the human affinity for cars. Improving childrens' opportunities for safe active commuting practices is doubtless affected by government transport policies; a pro-child trans-

port policy favours childrens' commuting practices and independent mobility.¹⁹¹ Children do not drive. Therefore, a pro-child transport policy must favour safe and convenient walking and cycling routes.¹⁹¹ Once again, rigorous inquiry is urgently needed to assist with the critical decision-making requisite of national transport policies.

5. Towards Intervention

In the US, the Healthy People 2010¹²⁸¹ objectives for children include increasing the proportion of trips made by walking or bicycling. This is a broad target statement, providing little direction on how to act. Intuitively, however, the best approaches to intervention would attempt to maximise the health benefits of regular active commuting to school, while at the same time alleviating parental safety concerns. The fact that children must travel to school in some manner, day after day, should be viewed as a unique opportunity to impart the multiple benefits of physical activity. Fortunately, self-motivated pockets of concerned citizens worldwide are currently implementing innovative model programmes and campaigns. One such programme, 'Safe Routes to School' is being implemented in Europe, Canada, the US and Australia. Such programmes typically encourage children to walk and bicycle to school by lobbying for improved street design, calming traffic and creating traffic-free zones around schools. The establishment of such a zone (approximately 2 blocks) would hopefully increase childrens' active commuting by discouraging short-distance chauffeuring and by reducing hazardous local traffic.

Another programme, 'Walking School Buses'¹²⁹¹ is a simple volunteer programme that engages parents on a rotational basis to escort small groups of children to school by foot or by bike from an established meeting point, or 'bus' stop. Such a programme not only has the potential to impact the child's physical activity, but also that of the role model parents. Such innovations provide unique natural experiments for researchers and evaluators to explore programme impact on childrens' physical activity and related health outcomes. The enterprising researcher who adequately evaluates these existing and emerg-

ing grass roots efforts will contribute much to our fledgling understanding of childrens' physical activity.

6. Conclusion and Research Directions

Since we know so little, there is much to be learned. To begin, we need information about childrens' transportation to school and other destinations including prevalence, mode, distance traveled, duration of average commute and frequency of commute. We need to understand the relative importance of active commuting to school to overall physical activity in schoolchildren, considering time spent in both in-school physical education classes, unstructured play during school breaks and out-of-school activity preferences. We need to ascertain what features of active commuting to school are associated with which health outcomes. We need to know if active commuting tracks through adolescence and adulthood. We need to investigate childrens' perception of active commuting, versus 'going for a walk' for health benefits. We also need to know more about the factors that influence mode of transportation choice, by child and by parent. This list is by no means exhaustive. Information derived from such research may have important population health and transportation policy implications.

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