



To: Transport Planners

From: Adrian Davis

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Subject: School Travel Toolbox: No.3 Children's physical activity and academic achievement

Top line: A significant positive relationship exists between physical activity, improved cognitive performance & academic achievement. This supports the case that physical activity should be part of the school day for both its physical health & cognitive benefits. Active travel to school therefore contribute significantly to broader educational goals.

Physical education is a field that advocates a holistic approach to human development. This approach emphasises that the mind and body are one entity and that anything that happens to one will affect the other. Physical educators therefore believe that the "whole child" comes to school to be educated and that this requires both mental and physical training. Furthermore, there is increasing recognition that physical training by way of active lifestyles and through exercise can contribute to improved cognition. This is in addition to physical activity's role combating the onset of conditions such as obesity and heart disease which can begin quite early in childhood.

A meta-analysis¹ of peer reviewed literature has found consistency across 15 studies.² From a conservative viewpoint, at the very least it can be said that time spent participating in physical activity will not hurt cognitive performance or academic achievement, and more significantly is likely to provide significant benefits. The meta-analysis has shown that the benefits derived from physical activity equally apply to physically and mentally disabled children and so may be an important component of their education programmes too.

Numerous mechanisms have been proposed to explain the relationship between physical activity and cognition. These mechanisms can be categorised into two broad areas – physiological mechanisms and learning/developmental mechanisms. The physiological mechanisms, such as increased cerebral blood flow, alterations in brain neurotransmitters, structural changes in the central nervous system, and modified arousal levels, are based on physical changes in the body brought about by physical activity. The learning/developmental mechanisms state that movement and physical activity provide learning experiences that aid, and may even be necessary for, proper cognitive development. Educators have suggested that movement, particularly in the very young, stimulates cognitive development. This meta-analysis provides a strong case for transport policy and practice to better enable children and young people to have physically active lifestyles through everyday travel needs starting with the school journey as there are also likely to be important educational benefits.

Another assessment of the literature has also found that majority of the studies reviewed suggest a positive association between physical activity and academic achievement and/or cognitive performance in school-aged children, both in adolescents and pre-adolescents.³ On the basis of the findings, there appears to be sufficient evidence to support increasing physical activity in school children without a detrimental effect on academic performance.

¹ Highly robust methodologically – see <https://travelwest.info/project/ee-3-the-evidence-hierarchy>

² Sibley, B. Etnier, J. 2003. 2003 The relationship between physical activity and cognition in children: A meta-analysis, *Pediatric Exercise Science*, 15: 243-256.

³ Bhattacharjee, D. 2015. *Physical activity through active travel Briefing Note: A best available opportunity for enhancing academic attainment among school pupils? A Summary of the Evidence*. Bristol City Council.