

University Sport in an Age of Economic Rationalism
- Some Lessons from Recent Evidence -

The beneficial effects of exercise on health, performance and longevity are well known. More recently, medical researchers have sought to quantify these advantages and provide evidence for such an assertion. A body of research now exists and it underlines that physical exercise is of great importance in adolescent and university students. Despite this, the problem of resource allocation often means that programs aimed at promoting physical activity suffer when weighed against academic initiatives. It is not the intention of this paper to argue that the importance of organised physical activity is of direct benefit to academic achievement. The overall health benefits of structured physical activity are probably much more important than possible academic gains. However, when policy makers need to make difficult decisions about where to spend public funds and administrators need to make decisions about where to focus resources in a climate of academic accountability, a proven relationship between physical fitness and academic achievement could be used as an argument to support, retain, and perhaps even improve physical fitness programs. The evidence for physical fitness and academic achievement is found in two forms: limited studies that seek to establish a direct correlation; and more general studies that highlight an association between the two. This paper will analyse these areas in turn and draw conclusions from the evidence presented.

Since the early 1990's researchers have sought to understand whether increasing rates of obesity and the decreasing incidence of physical activity has a tangible, academic outcome. Although academic standing and safety continue to rank as high-priority issues in public schools and universities, educators and administrators are beginning to recognize in general the importance of student health on academic success. The move toward a holistic approach suggests that efforts to improve a student's physical, social, and emotional well-being are as important as efforts to increase test scores (Gutin, et al. 2004).

Adolescent obesity is of epidemic proportions in our community. It is a complex integration of social, psychological, and physical factors that exacerbate the turbulent transitional years of adolescence. A small body of research has sought to directly examine the relationship between physical fitness and academic achievement, and the research evidence that exists is not overwhelming. One reason research evidence of this type may be scarce is that it is difficult to obtain valid and reliable measures for both physical fitness and academic achievement on the same subjects. Another reason is that it is difficult to obtain large representative samples of students who have both achievement and fitness scores. Consequently, analysis of this direct correlation is predominantly found in school children in whom standardised testing is common.

To this end, two large studies have been performed that demonstrate a significant link between physical activity and grades. A cross-sectional study completed by the California Department of Education (CDE) in 2002, included a sample of 954,000 students who were in grades five (353,000), seven (322,000), and nine (279,000). The study matched standardised fitness and academic scores and found that there existed "a distinct and linear correlation between students' academic achievement and fitness scores" in all three grades; higher academic performance was positively related to higher levels of fitness. The second study by Dwyer, et al. (2001) analysed the fitness

and academic performance of 7,961 Australian schoolchildren (7-15 year olds). The researchers used a questionnaire/fitness test for measurement of physical activity/physical fitness and a 5-point scale to depict academic performance. The study's analysis concluded, "consistently across age and sex groups, the [academic] ratings were significantly correlated with questionnaire measures of physical activity".

Shore, et al. (2008) conducted a further study that provides an association between academic achievement and physical fitness. Subjects consisted of 6th and 7th grade students enrolled in a large, American school. The study compared grade point averages, nationally standardized reading scores, school detentions, school suspensions, school attendance, tardiness to school, physical fitness test scores, and participation on school athletic teams among non-overweight, at risk for overweight, and overweight students. Overweight students achieved lower grades and lower physical fitness scores than their non-overweight peers. Overweight students demonstrated a 0.4 letter grade lower GPA (on a 4.00 scale) and 11% lower national percentile reading scores than their non-overweight peers. The overweight students also demonstrated significantly more detentions, worsened school attendance, more tardiness to school, and less participation on school athletic teams than their non-overweight peers.

Such studies suggest a correlation between physical fitness and academic achievement. There are, however, many more studies that highlight the importance of physical fitness programs in combating poor health, and improving morbidity. Indeed, the AusDiab study (Cameron, et al., 2003) demonstrated that over 48% of men and 29% of women in Australia are overweight. Calle (2003) further highlighted the increased incidence of mortality in overweight people and its link to poor cardiovascular health and cancer. Other effects of poor physical fitness have also been evaluated. Several school-based studies of physical fitness argue that sports improve peer relations and confidence. Indeed, Benony (2007) concluded that gifted students benefit from sports as it helps them overcome their introversion. Chomitz (2009) also found that increased physical fitness was associated with better levels of attention and performance.

In a 2003 study, Kvaavik and his team elucidated that the foundation for adult body weight is laid during the teenage years. The paper emphasised the need for doctors and policy makers to encourage physical activity in teenagers and young adults. Epidemiological data also supports this finding and shows that increased physical activity is a means of combating the modern, obesogenic environment. Jeffrey and Harnack in their 2003 study showed a linear correlation between increasing caloric intake and obesity. The data shows that since the 1970s, average calorie consumption has increased, along with rates of obesity. Declining physical fitness is also correlated with increased sedentary activity. Hu, et al. (2003) showed that of all sedentary behaviours, TV-watching time correlates strongest with obesity.

Policy makers have sought to overcome this obesogenic environment as they recognise the increased health costs associated with it. In their study of all causes of death in the United States Mokdad, et al. (2004) found that obesity and inactivity was the second most preventable factor behind tobacco use. Governments are increasingly aware of this and in a 2003 presentation to the subcommittee on education reform, the

Surgeon General of the United States not only detailed that the annual cost of obesity to America was in excess of \$US117 billion, but that it was incumbent on all academic institutions to combat this through increased education and the provision of facilities for physical activity. In Australia, the 2020 Summit focussed on the need to overcome physical inactivity as a means of improving health and reducing the morbidity associated with obesity. An ambition of the Summit was for Australia “to aim to become the most healthy, health literate, physically active and health conscious nation”. It is expected that this aim will be achieved through encouraging physical fitness beyond school and into adulthood.

The Government’s interest in improving physical fitness is longstanding, and it has previously sought to make gains through public health messages and programmes. The *Life Be In It* campaign was established to increase rates of physical activity, and educate the population about the negative effects of obesity. The Heart Foundation was also established to augment this message and provide specific dietary and exercise advice. Despite this, the Australian population has continued to reduce its physical fitness and activity. Studies by Kromhout (1983) and Prentice (1995) suggest that over the past 20 years physical activity has declined with age and that population weight has increased.

To combat this phenomenon, the Government is now considering economic incentives to improve rates of physical fitness. In addition to specific exercise programmes, the 2020 Summit proposed a ‘junk food tax’. This was met with much scepticism, and institutes such as the Centre for Independent Studies proposed that the tax would have to be extremely high in order to be successful. However, in America over 40 states have small taxes on sweetened beverages. A 2008 review by Yale University’s Rudd Centre for Food Policy and Obesity suggested that for every “10% increase in price, consumption decreases by 7.8%”. The increased volume of economic and health policy research suggests that governments are now more focussed on achieving increased rates of physical activity through direct measures. This perhaps recognises the increasing cost of health care related to decreased physical activity and obesity, and the need to produce immediate results through punitive and promotional initiatives.

In the future, universities will undoubtedly be asked to partner with governments in not only providing state of the art sports facilities, but also increased health education. This recognises the direct benefits that physical activity has on health and academic achievement. It also addresses the Government’s stated aims of becoming a more active and healthy nation. The economic costs of reduced physical activity are clear, as are the potential benefits. Accordingly it would be expected that a university, which has stated its intention to be ‘a world leader’, would provide both comprehensive academic programmes, and appropriate funding for state of the art sports facilities.

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Bibliography

Benony H., et al. The Link Between Depression and Academic Self-Esteem in Gifted Children. *Encephale*. 2007; 33: 11-20

Calle, EE., et al. Overweight, obesity, and mortality from cancer in a prospectively studied cohort of U.S. adults. *N Engl J Med*. 2003; 24:348(17): 1625-38

Cameron AJ., et al. Overweight and obesity in Australia: the 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (AusDiab). *Medical Journal of Australia*. 2003; 178: 427-432

Chomitz, V., et al. Is There a Relationship Between Physical Fitness and Academic Achievement? Positive Results From Public School Children in the Northeastern United States. *The Journal of school health*. 2009/01;79(1):30-37.

The Department of The Prime Minister and Cabinet. The Australia 2020 Summit – Final Report. Commonwealth of Australia, 2008.

Dwyer, T., et al. An investigation of the effects of daily physical activity on the health of primary school students in South Australia. *International Journal of Epidemiologists*, 1983; 12(3), 308-313.

Dwyer, T., et al. Relation of Academic Performance to Physical Activity and Fitness in Children. *Pediatric Exercise Science*, 2001; 13, 225-238.

Gutin B., et al. Relations of fatness and fitness to fasting insulin in black and white adolescents. *J Pediatr*, 2004 Dec; 145:737-43.

Hu, et al. Television Watching and Other Sedentary Behaviors in Relation to Risk of Obesity and Type 2 Diabetes Mellitus in Women. *JAMA*. 2003; 289: 1785-91

Jeffrey & Harnack. Evidence Implicating Eating as a Primary Driver for the Obesity Epidemic. *Diabetes*. 2007; 56:2673-2676

Kromhout, et al. Energy and macronutrient intake in lean and obese middle-aged men *Am J Clin Nutr*. 1983; 37:287-94

Kvaavik E., et al. Predictors and tracking of body mass index from adolescence into adulthood: Follow-up of 18 to 20 years in the Oslo Youth Study. *Arch Pediatr Adolesc Med*. 2003 Dec; 157:1212-8.

Linder, KJ. Physical Activity Participation - Academic Performance Relationship Revisited: Perceived and Actual Performance and the Effect of Banding (Academic Tracking). *Pediatric Exercise Science*, 2002; 14: 155-170.

Mokdad, AH., et al. Actual Causes of Death in the United States, 2000. *JAMA*. 2004; 291:1238-45

Prentice, et al. Obesity in Britain: gluttony or sloth? *BMJ*. 1995; 311:437-9

Shore SM., et al. Decreased scholastic achievement in overweight middle school students. *Obesity (Silver Spring)*. 2008 Jul; 16:1535.

Statement of Richard H. Carmona, M.D., M.P.H., F.A.C.S. to the subcommittee on Education Reform, "The Obesity Crisis in America". Wednesday, July 16, 2003

Tremblay, MS., et al. The Relationship Between Physical Activity, Self-Esteem, and Academic Achievement in 12-Year-Old Children. *Pediatric Exercise Science*, 2000; 12, 312-324.