

## **House of Commons Science and Technology Select Committee Evidence Check**

This memorandum was collated by the Government Office for Science in response to the House of Commons IUSS Committee's 'Evidence Check'.

***Within the submission we highlight the contributions of individual departments, the Government Office for Science and the Government Chief Scientific Advisor have not offered any comment on contributions.***

## ***Brain Gym***

This response was provided by the Department for Children, Schools and Families.

### **Q1 What is the Government's policy on the use of Brain Gym and the teaching of its underlying theory in schools?**

The Department is aware of "Brain Gym", which is presented as learning readiness activities to help children of all physical, social and learning abilities to develop and practice sensory-motor skills for related learning skills.

The Department does not have a specific policy on the use of Brian Gym. We are unaware of any sufficiently robust or peer-reviewed evaluation of the approaches it promotes, which would allow any clear link between the use of Brain Gym and pupils' learning to be established. We are also aware of a significant body of criticism of the theoretical underpinnings of the programme, set out below.

Overall, Brain Gym has not been evaluated using a robust and appropriate methodology, therefore no conclusions about its effectiveness can be drawn using the existing sources of information.

### **Q2 What scientific evidence is there that Brain Gym works? Does the Government support the scientific theory behind Brain Gym?**

Brain Gym has been criticised as being unscientific in a wide-ranging and authoritative review of research into neuroscience and education.

Peer reviewed scientific studies into Brain Gym have found no significant improvement in general academic skills. Brain Gym's claimed results have been put down to the placebo effect and the general benefits of breaks and exercise. Brain Gym's founder, Paul Dennison, has admitted that many of Brain Gym's claims are not based on good science, but on his "hunches".<sup>1</sup>

In 2008 *Sense About Science* published a briefing document in which thirteen British scientists responded to statements taken from the "Brain Gym guide (Teacher's Edition)". Each of them entirely rejected the statements that were put to them. Brain Gym's scientific content was described as "pseudo-scientific". One of the scientists, Professor of neuroscience Colin Blakemore, said that "there have been a few peer reviewed scientific studies into the methods of Brain Gym, but none of them found a significant improvement in general academic skills. Sense about Science, along with

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<sup>1</sup> "News in brief". The Times. 2008-04-05. <http://www.timesonline.co.uk/tol/news/uk/article3671213.ece>. Retrieved 2008-09-01. "Paul Dennison, a Californian educator who created the programme, admitted that many claims in his teacher's guide were based on his 'hunches' and were not proper science."

the British Neuroscience Association and the Physiological Society, wrote to every Local Education Authority in Britain to warn them about the program.<sup>2</sup>

In 2007 Dr. Keith Hyatt of *Western Washington University*<sup>3</sup> wrote a paper in which he analysed the available research into Brain Gym, as well as its theoretical basis. He concluded that Brain Gym is not supported by research, and that its theoretical basis does not stand up. The paper also encouraged teachers to learn how to read and understand research, to avoid teaching material that has no rational basis.

## Background notes

Brain Gym is a commercial training program created in the 1970's by Dr. Paul Dennison and Gail E. Dennison, who "were seeking more effective ways to help children and adults of all physical, social and learning abilities, in particular those identified through the programme as 'learning disabled.'<sup>4</sup>

The program is based on the premise that all learning begins with movement, and that any learning challenges can be overcome by finding the right movements, to subsequently create new pathways in the brain. It claims that the repetition of certain movements "activates the brain for optimal storage and retrieval of information" and "promotes efficient communication among the many nerve cells and functional centres located throughout the brain and sensory motor system. There are 26 of these exercises, which are designed to "integrate body and mind" in order to improve "concentration, memory, reading, writing, organising, listening, physical coordination, and more.

Educational Kinesiology teaches that brain function is defined in terms of three dimensions: laterality is the ability to co-ordinate the left and right sides of the brain, focus is the ability to co-ordinate the front and back of the brain, and centering is the ability to co-ordinate the top and bottom of the brain. According to Brain Gym, people whose brains are not interconnected properly in the three different dimensions suffer from corresponding deficits; for example, the ability to move and think at the same time is dependent on laterality (left to right co-ordination). The Brain Gym exercises are claimed to work by interconnecting the brain in these three dimensions. Anatomical, physiological and neurological research does not support this model.

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<sup>2</sup> Sense About Science - Brain Gym". Sense About Science.

<http://www.senseaboutscience.org.uk/index.php/site/project/233/>. Retrieved 2008-04-11. "These exercises are being taught with pseudoscientific explanations that undermine science teaching and mislead children about how their bodies work. ... There have been a few peer reviewed scientific studies into the methods of Brain Gym, but none of them found a significant improvement in general academic skills."

<sup>3</sup> Hyatt, Keith J. (April 2007). "Brain Gym - Building Stronger Brains or Wishful Thinking?" (fee required).

Remedial and Special Education (SAGE Publications) 28 (2): 117–124. ISSN 0741-9325.

<http://rse.sagepub.com/cgi/content/abstract/28/2/117>. Retrieved 2008-09-12. "a review of the theoretical foundations of Brain Gym and the associated peer-reviewed research studies failed to support the contentions of the promoters of Brain Gym. Educators are encouraged to become informed consumers of research and to avoid implementing programming for which there is neither a credible theoretical nor a sound research basis."

<sup>4</sup> Brain Gym - about". The Official Brain Gym Web Site. <http://www.braingym.org/about>.