Theme(s): Special Educational Needs

What are the effects of a movement programme on pupils with learning difficulties?

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Introduction

Children who undertook the Primary Movement programme significantly improved their achievement in reading and maths according to this recent, comparative study of the progress of 683 children over a two-year period.

Previous research had identified links between persistent primary reflexes such as Asymmetrical Tonic Neck Reflex (ATNR), and learning difficulties in children. So researchers in this study investigated the impact of a two-year Primary Movement programme on pupils' core academic skills; reading, spelling and maths. Pupils followed a programme designed to mimic foetal movements, in order to stimulate the development of secondary reflexes and thus inhibit persistent primary reflexes. The findings from the evaluation show that levels of ATNR were reduced and pupils' attainment in reading and maths (less significantly in spelling) improved following the movement intervention.

Keywords: United Kingdom, pupils, numeracy, literacy, special educational needs, physical education.

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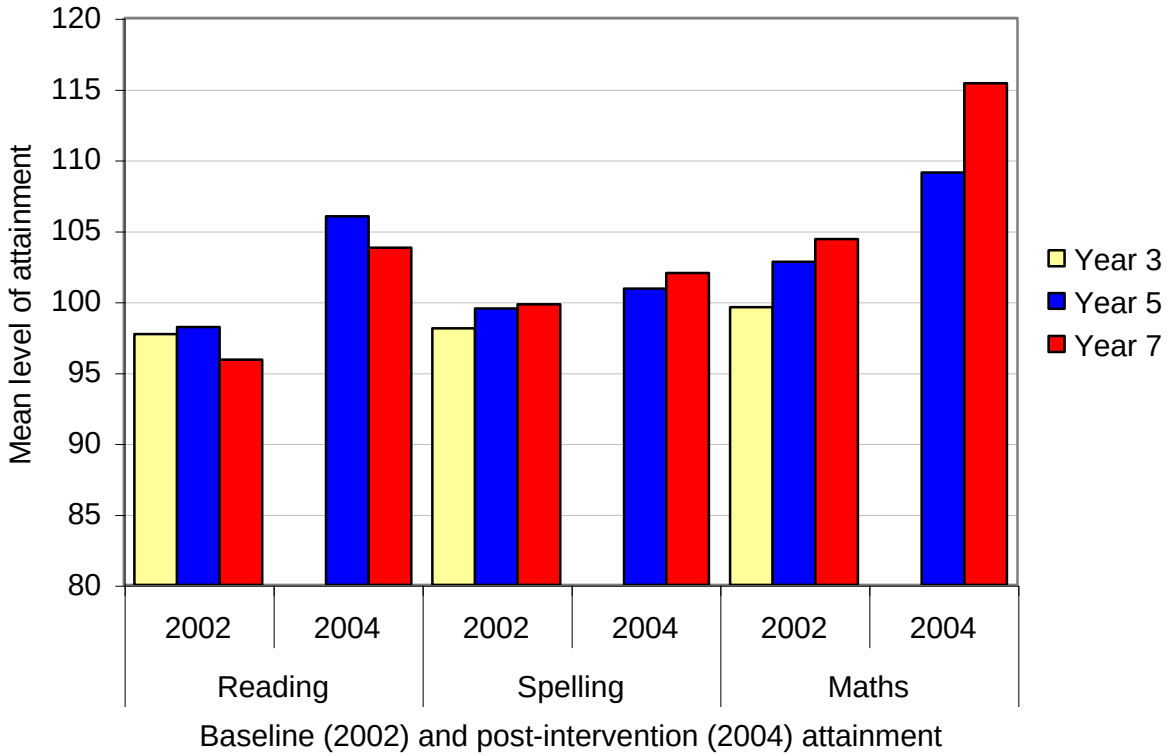
What effect did the Primary Movement programme have on pupil's attainment?
The researchers found that the Primary Movement programme significantly reduced the occurrence of ANTR in pupils and improved their academic performance. Attainment levels in reading, spelling and maths improved for both boys and girls from Year 3 to Year 7, with the greatest improvement in reading and the smallest improvement in spelling.

Graph 1. Graph showing the baseline and post-intervention attainment levels of the pupils involved in the Primary Movement programme.



What are 'primary reflexes' and 'Asymmetrical Tonic Neck Reflexes' (ATNR)?

Primary Reflexes

More than 70 primary reflexes, such as sucking, grasping and rooting, have been identified as naturally developing in babies before birth and persist for up to one year. They play a crucial role in the survival of newborns. During the first year of life the primary reflexes are naturally inhibited and transformed into secondary reflexes, which are important for coordination and balance.

Research has found that abnormalities in the degree or rate attrition of primary reflexes can lead to problems in the development of motor functions which in severe cases can result in cerebral palsy and autism, and in less severe cases learning difficulties such as dyslexia. The Primary Movement intervention used in this study was designed to integrate and transform persistent primary reflexes, by imitating the reflexes that emerge during early development and by stimulating the development of secondary reflexes.

Asymmetrical Tonic Neck Reflex (ATNR)

ATNR is a form of persistent primary reflex that is usually identified in babies within the first three months of life and affects their orientation. The cause of the persistence of primary reflexes in early child development is still unknown.

ATNR can be detected in babies by turning their heads to one side when they are lying on their backs. This causes the extension of the arm and the leg on one side

and the flexion of the opposing limbs. These reactions should start to be naturally inhibited at six months old, but in babies with ATNR these primary reflexes persist.

Similarly, ATNR is screened in children by making them stand up straight with their arms outstretched in front of them, the tester moves the child's head to one side. The usual indicators for persistent primary reflexes include movement of the extended arms in the direction the head has been turned, dropping of the arms and loss of balance.

Learning difficulties which result from persistent primary reflexes can be relatively mild. Cerebral palsy is a severe form of ATNR where the sufferer experiences extreme motor and reading difficulties despite normal levels of intelligence.

The researchers found from the baseline data they collected that the occurrence of ATNR was considerably higher in boys than in girls. The persistence of ATNR in boys was linked to their lower levels of attainment in spelling, reading and maths than the girls in the study.

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What is the Primary Movement programme?

The Primary Movement programme used in this study, involved the daily repetition of a short sequence (10-15 minutes per day) of movements that mimic the early movements of the foetus. These specific exercises are designed to stimulate the maturation of the central nervous system. The Primary Movement programme is presented in a child-friendly format, with singing, actions and rhythms. Some of the schools used the Primary Movement programme as an activity change in the classroom and others incorporated it into the physical education curriculum.

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What were the aims and design of the study?

The study aimed to evaluate the effectiveness of the two-year Primary Movement programme when used in whole class situations in ordinary primary schools, on mathematical reasoning and literacy (reading and spelling).

The study involved 683 children from 13 primary schools in Northern Ireland. The results of the study were compared for two groups of children, one group received the movement intervention and the comparison group did not. The groups comprised of pupils from Year 3 (7 years old), Year 5 (9 years old), and Year 7 (11 years old). The programme involved a short sequence of movements that were repeated in class on a daily basis for 10-15 minutes every day.

Pupils were tested individually for reading, spelling and maths ability and verbal IQ levels. ATNR persistence was measured with clinical diagnostic tests. The researchers analysed their findings using multiple regression analysis and one-way ANOVA to evaluate the changes in pupils' performance and ability.

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What are the implications?

In completing this digest the author began to ask the following questions about the implications for teachers and school leaders:

Teachers

- The primary movement intervention was able to improve pupils' achievement in all core areas, especially reading and maths. Could the approaches outlined in this study be used to unlock potential, to help your pupils work to their full ability?
- Is there provision in your school for you or your SENCO to receive specialist training in screening and helping pupils with ATNR?

School leaders

The findings from the study show that pupils with ATNR were underachieving in core subject areas.

- Has your school considered assessing pupils with learning difficulties for ATNR, in order to provide them with more specialist support? See the link to the Primary Movement website below for more information on ATNR and training courses.
- How could the introduction of a primary movement programme help your pupils to achieve their full potential?

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Where can I find out more?

The Primary Movement website provides clear and concise information on Asymmetrical Tonic Neck Reflex (ATNR) and the Primary Movement programme. The website also gives information about forthcoming Primary Movement training courses where you can learn the movement intervention reported on in this study. For more information please visit the Primary Movement website www.primarymovement.org [Accessed: 28/04/05].

There is an interesting practitioner case study on the National Teacher Research Panel website which investigates and evaluates the implementation of a movement programme with implemented over 9 months with Year 3 children.
O'Donovan, C. et al (2004) *Investigating the impact of using exercise and movement on learning in Foundation Stage and KS1 and 2*. Available at: http://www.standards.dfes.gov.uk/ntrp/lib/pdf/PreedyWolinskiandODonovan.pdf (Accessed: 07/07/06)

Practitioners and leaders may be interested in other TRIPS summaries on inclusion and supporting pupils with learning difficulties. Please have a look at the TRIPS website www.standards.dfes.gov.uk/research under the theme of 'inclusion' where you will find digests such as:

- *Achieving high standards and the inclusion of pupils with special educational needs.* Available at: www.standards.dfes.gov.uk/research/themes/pupil_grouping/WedOct161037372002/ [Accessed: 02/05/06]
- *Engaging ADHD students in tasks with hand gestures: a pedagogical possibility for teachers.* Available at: www.standards.dfes.gov.uk/research/themes/inclusion/adhd/ [Accessed: 02/05/06]
- *Factors associated with the effective inclusion of primary-aged pupils with Down's syndrome.* Available at: www.standards.dfes.gov.uk/research/themes/inclusion/inclusionanddownsyndrome/ [Accessed: 02/05/06].

Information about teaching children with learning difficulties including dyslexia and dyscalculia can be found on both the DfES website www.dfes.gov.uk and the Teachernet website www.teachernet.gov.uk [Accessed: 28/04/05].

For information on dyscalculia and dyslexia, the following American website has an extensive range of resources, articles and particle advice for both teachers and parents, please visit www.dyscalculia.org [Accessed: 28/04/05].

The Dyslexia Institute website also provides information on teaching children with dyslexia and how to go about getting children assessed for dyslexia, please visit www.dyslexia-inst.org.uk [Accessed: 02/05/06].