National Teacher Research Panel
engaging teacher expertise

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Exercise for Learning

The Exercise for Learning Project is based upon the research of Sally Goddard and Peter Blythe from the Institute of Neuro-Physiological Psychology (INPP).

The INPP training demonstrated that at birth a baby is brain stem dominated and that this "reptilian" part of the brain is responsible for primitive reflexes that are necessary for early survival. If retained these may impede later functioning and learning.

The INPP has devised an assessment and daily programme of exercises to inhibit primitive reflexes which can be carried out in a school setting. We therefore designed a project to find out if the exercise programme had an impact upon reading accuracy and comprehension.

Aims of the project

- To introduce the INPP daily exercise programme and to assess whether it had an impact upon reading.
- To train support staff to implement the daily programme.
- To inform and involve parents in the project.

Context

40 teachers received training from Sally Goddard Blythe on the impact of retained primitive reflexes. Four of the teachers then worked with a sample of 9 Year 3 children in one school and a control group of 9 Year 3 children in another school over a period of 9 months.

Summary of main findings

- The average increase in reading accuracy and comprehension for children on the daily exercise programme was 14 months for both over a 9 month period.
- Children in the control group made 8 months progress in reading accuracy and 4 months in reading comprehension during the same period.
- The programme appeared to support the children personally and socially.
- Teachers observed improvements in children's concentration, self-esteem and self-confidence.

Background

Knowle CE Primary School is situated near Solihull, in central England. There are over 500 children aged from 3 - 11 years. Knowle is a village with considerable new housing development around the centre. The proportion of children entitled to free school meals is lower than the national average.

The researchers were aware of children who were underachieving but for whom the usual strategies made minimal impact, and sought to investigate how these children could best be supported. Knowle School is a Beacon School and had already developed a programme called Fit for Learning which linked physical exercise with learning. The headteacher, Pat Preedy, heard of the work of the INPP through a colleague and invited Sally Goddard Blythe to the school to talk to staff. The INPP training raised awareness that retaining primitive reflexes could affect:

- balance
- auditory processing
- visual processing
- muscle tone
- co-ordination
- posture
- fine motor skills
- left/right orientation
- hand-eye co-ordination

The subsequent impact upon learning can be profound and can result in:

- Specific Learning Difficulties
    - Dyslexia (problems with reading and writing and processing)
    - Dyspraxia (problems with balance and co-ordination)
    - Attention Deficit Disorder (ADD)
    - Dyscalculia (Maths problems)
    - Underachievement
- Behavioural Problems
    - Hyperactivity (ADHD)
    - Bedwetting
    - Anxiety
    - Agoraphobia
- Coordination Difficulties
    - Balance
    - Clumsiness
    - Dysfunction of Attention, Motor Perception (DAMP)

Project staff at Knowle School were trained by Sally Goddard Blythe to implement the screening process and exercise programme. It was decided to focus the project upon Year Three children because there is an intense period of brain development in children at this age.

Teaching processes and strategies

The Exercise Programme

The Knowle children were given blocks of exercises (6 blocks of 4 exercises) from October to July. The exercises are based upon infant movement patterns which form the basis of later voluntary movement, following the normal developmental sequence. They range from simple head lifts to crawling and use all parts of the body. The movements are performed in a smooth and controlled manner.

Research methods

In order to measure the effect of the exercise programme it was decided to use a control group from a school in the same area, with a similar catchment and academic profile (based on SATS results). This school was offered the option of introducing the exercise programme the following year.

Measure of Educational Progress

The NFER Individual Reading Analysis Test (X and Y) was used to measure reading accuracy and comprehension at the start and end of the project.

Screening

The following methods were used to screen the Year Three Group:

- INPP Test Battery
- Schrager One Leg Stand
- INPP Children's Questionnaire completed by parents

At the beginning of the Autumn Term 2002, Year Three Children were screened using a test battery designed by Sally Goddard Blythe. This process involved assessment of balance and co-ordination by means of tests including the tandem and fog walk and tests for the presence of retained reflexes. The testing also included visual tracking and sound discrimination. Children were scored on each item from 0 - 4. The Schrager One Leg Stand was also used for screening purposes.

Children were selected on the basis of the total score on the test battery, high scores on the tandem walk and/or the fog walk, six or more positives on the parent questionnaire and inability to balance on one leg for 30 seconds or more.

Parental meeting

Parents attended a meeting where the effect of retaining primitive reflexes and the potential benefits of the exercise programme were explained. Parents were informed that the children selected would do the exercises in school every morning for 15 minutes, before Collective Worship.

Parents were given a copy of the exercises so that the children could do them at home if they so wished.

The sample

Following the screening process 9 children out of 60 were identified at Knowle School and 9 children out of 54 in the control School.

Results

The following section presents the results from the project which lasted from October 2002 to July 2003 (9 months):

Knowle Reading Test Results:

Child	Accuracy Start	Accuracy End	Change Months	Comprehension Start	Comprehension End	Change Months
1	6.1	7.11	+22	7.9	8.9	+12
2	6.5	8.2	+21	7.9	9.8	+23
3	6.11	9.2	+27	7.3	9.2	+23
4	8.0	9.2	+14	7.9	9.2	+17
5	8.7	9.11	+16	7.9	10.2	+29
6	9.0	9.8	+8	9.9	9.2	-7
7	9.5	10.2	+9	9.9	9.8	-1
8	9.6	9.11	+5	8.9	9.2	+5
9	9.6	9.11	+5	6.0	9.2	+29

Average Change - Knowle Group

Accuracy	+14 Months
Comprehension	+14 Months

Control School Reading Test Results:

Child	Accuracy Start	Accuracy End	Change Months	Comprehension Start	Comprehension End	Change Months
1	5.5	6.1	+8	5.2	5	-2
2	5.6	6.2	+8	5.2	5.11	+9
3	6.2	8.9	+31	8.3	7.4	-11
4	6.11	6.11	-1	7.3	8.9	+18
5	7.10	9.6	+20	10.3	9.2	-13
6	8.6	8.11	+5	8.3	9.8	+17
7	9.0	8.11	-1	9.9	9.8	-1
8	9.3	9.3	0	8.9	9.8	+11
9	9.3	9.9	+6	9.3	9.8	+5

Average Change - Control Group

Accuracy	+8 Months
Comprehension	+4 Months

There were other benefits as well as the improvement in reading accuracy and comprehension; the children enjoyed the programme and said how much it had helped them personally and socially. One mother wrote to say how delighted her son was because his football skills had improved and he had been picked for the football team. The following are examples of comments from children:

"I have more self confidence. I have improved my co-ordination, catching skills and handwriting. I have also learnt to ride my bike."

"My work has got faster. I find throwing and catching easier."

"My balance is getting better. I can also write and colour more neatly."

"The exercises have helped me in Maths. I am now a super genius. I am also faster at doing things at home."

"I have more control in the classroom. I can focus on my work."

Teachers observed improvements in concentration and self-esteem:

"The children's behaviour and work has noticeably improved over the year."

"Three of the children have made a sudden spurt at the end of the year, which is very unusual."

"It is much easier to manage the class. The lively children are more focused and capable of completing work within lessons"

Some of the anomalies in the results can be imputed to the reading test used which was insufficiently discriminating at the higher end of the scale. It was also noted that children's ability to read accurately was not always matched by comprehension. There will always be individual results which do not fit the trend, but the overall results on this small sample were encouraging.

Conclusion

The Exercise for Learning Project has been extremely successful with parents, children and teachers noting improvements in gross and fine motor development and self-esteem as well as in reading. It was noticeable that at the end of the project the children were calmer, more controlled and able to discuss how the project had helped them. The class teachers found the children to be better able to concentrate and to stay on task. This meant more time for teaching and less time spent on dealing with inappropriate behaviour. It also allowed the group as a whole to work more effectively.

If schools wish to replicate the project they will need to ensure that staff are trained by a qualified therapist from INPP using the appropriate training manual which is copyright.

Schools may choose for the children to:

- do the exercises in school with school staff;
- do the exercises at home with parents; or
- do the exercises at school and at home.

It is recommended that there is an initial meeting with parents to explain the benefits of Exercise for Learning.

Exercise for Learning has been an exciting and worthwhile project which has resulted in noticeable benefits to this group of children. All the children enjoyed participating in the project and their contributions and feedback have been invaluable in the project's development.

Suggestions for further reading

Eliot, L. (1999) Early Intelligence, Penguin

Goddard, S.A, (2000) Reflexes, Learning and Behaviour, Fern Ridge Press Eugene

Gallahue D.L., & Ozmun J.C. (2002) Understanding Motor Development, McGraw-Hill

Smith P.K., Cowie, H., & Blades, M. (1988) Understanding Children's Development, Blackwell

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