



'Neuromotor Immaturity'

A study of 60 children in a Sutton Coldfield School Reception class, to see if certain physical immaturities (Neuromotor Immaturity), might act as a barrier to learning.

Question 1

If a child has issues with

- Balance
- Crawling
- Crossing their midline
- Finger and Thumb Opposition
- Primitive (Baby) Reflexes
- Visual Perception

Are they more likely to underperform in the reception class?

Question 2

If so, does following the INPP Development Movement Programme reduce these issues and improve performance at school?

‘Neuromotor Immaturity’ – Can some underlying physical immaturities disadvantage children in the Foundation Stage?

‘Neuromotor Immaturity’ is described by Sally Goddard Blythe, in ‘Assessing Neuromotor Readiness for Learning’, as the ‘retention of immature patterns of movement control’ (page 4). Her book outlines developmental screening tests for children and intervention programmes. There is clear evidence, both from clinical practice and research, to show that ‘Neuromotor Immaturity’ is a barrier to some children’s learning, and that if this barrier is removed, through a specific exercise programme, the children can better access what a school has to offer.

The screening for 4-7 year olds includes assessing:

- aspects of neuromotor maturity;
- the presence of primitive (baby) reflexes;
- visual perception and visual motor integration.

A school in Sutton Coldfield have tested their two reception classes and is now targeting specific children with the INPP exercise programme. It is too early yet to come to a judgement about the efficacy of the programme. However we can interrogate the data to see if there is any link between various aspects of ‘Neuromotor Immaturity’ and the children’s performance in reception.

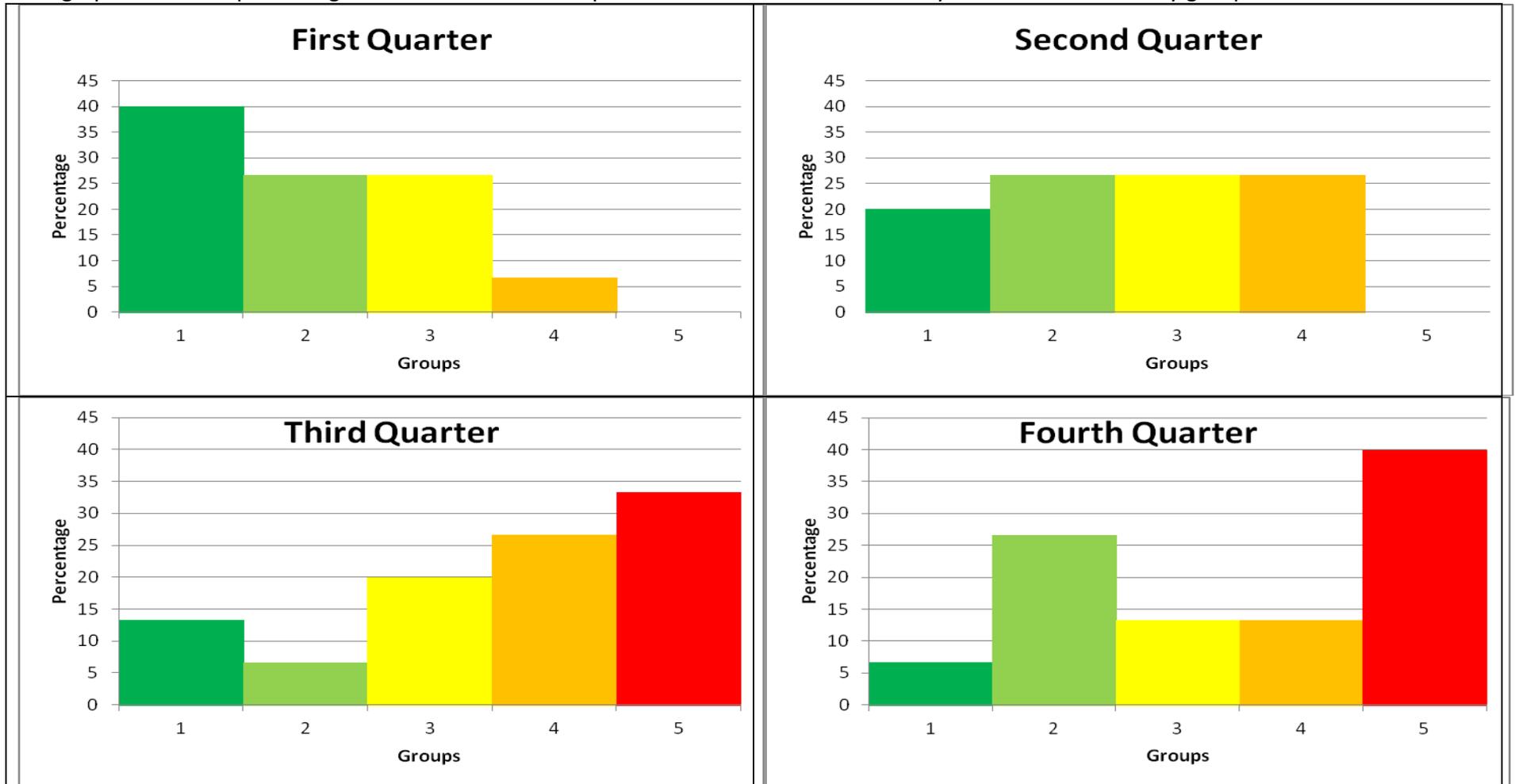
The following research looks at ‘Neuromotor Immaturity’, primitive reflexes, balance, crawling and finger/thumb opposition.

Neuromotor Immaturity and Performance in the Reception Class

The 60 children in a reception class were divided by their teachers into five ability groups. Using the 14 tests in ‘Assessing Neuromotor Readiness for Learning’ by Sally Goddard Blythe, the children’s neuromotor immaturity was assessed. The children were ranked according to their scores and then divided into quartiles, with the lower quartiles having the highest degree of Neuromotor Immaturity. If Neuromotor Immaturity is a potential barrier to a child’s performance in school, it would be reasonable to expect a higher proportion of children in the lower quartiles to be in the lower groups, as assessed by their teachers. The graphs following demonstrate this. Looking at the distribution of children in the two lower quartiles of Neuromotor Immaturity, we find only 33% in the two highest academic groups compared to 77% in the two lowest.

Neuromotor Immaturity and Performance in Reception Class

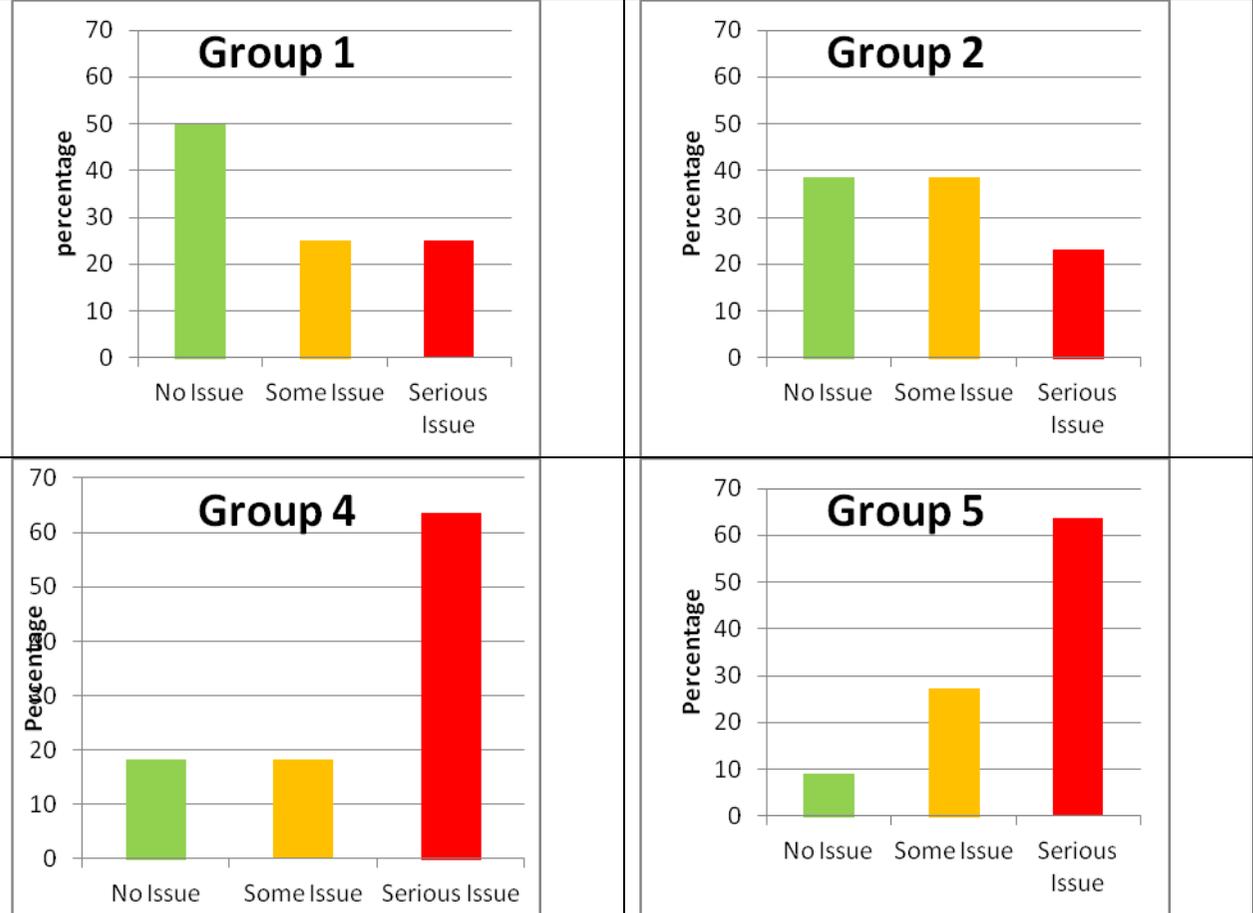
The graphs show the percentage of children from each quartile of Neuromotor Immaturity in each of the 5 ability groups.



Primitive Reflexes and Performance in Reception Class

Primitive (baby) reflexes develop in the womb and are fully developed by the time the baby is born. During the first six months they are usually inhibited as more conscious voluntary actions take over or more mature postural reflexes develop. Further information about how residual presence can act as a barrier to learning can be found at www.open-doors-therapy.co.uk, www.inpp.org.uk and in the reference list following. The data following refers to just one primitive reflex - Asymmetrical Tonic Neck Reflex (ATNR).

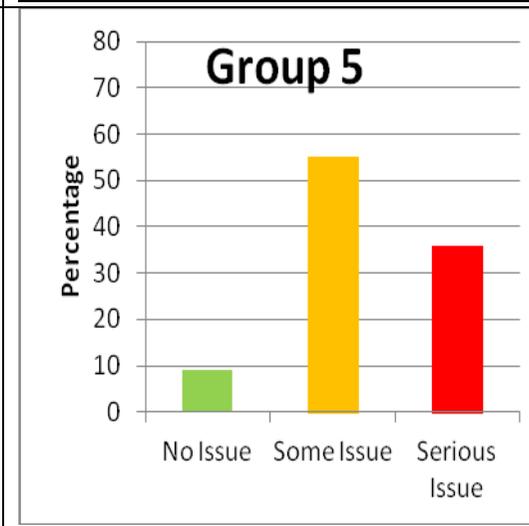
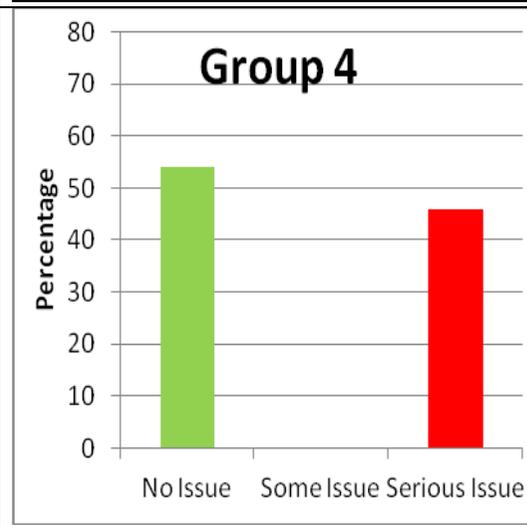
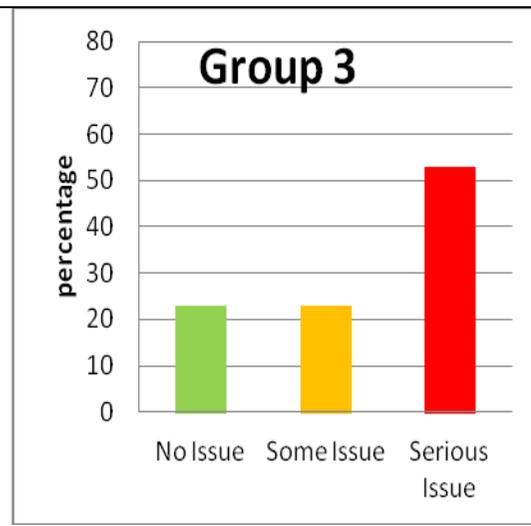
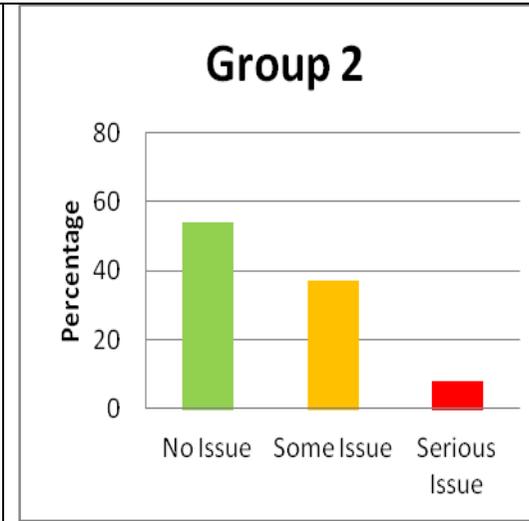
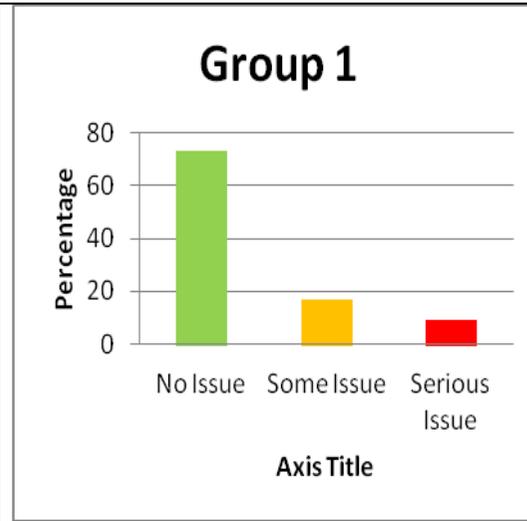
The 60 children in a reception class were divided by their teachers into five ability groups. Using 'Assessing Neuromotor Readiness For Learning' by Sally Goddard Blythe, the children's residual asymmetrical tonic neck reflex was assessed. The results were divided into 3 levels - 'No Major Issue', 'Some Issues' and 'Serious Issues'. The data suggests that those who have serious issues tend to be in the bottom two ability groups. Some 63% of the bottom two groups have a strongly retained ATNR compared to 24% of the top two groups



Balance and Performance in Reception Class?

The 60 children in a reception class were divided by their teachers into five ability groups. Using 'Assessing Neuromotor Readiness For Learning' by Sally Goddard Blythe, the children's ability to balance on one leg was assessed. Their ability was divided into 3 levels - 'No Major Issue', 'Some Issues' and 'Serious Issues'.

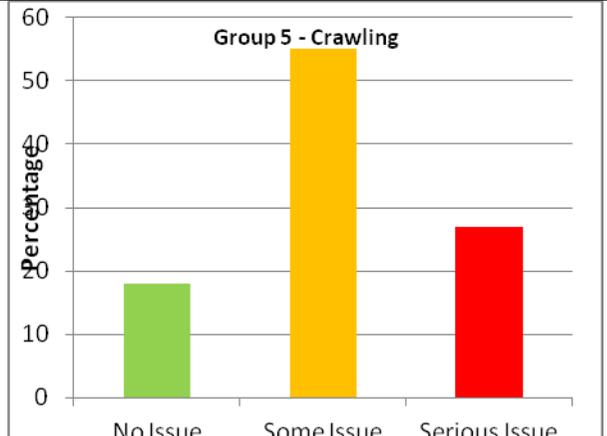
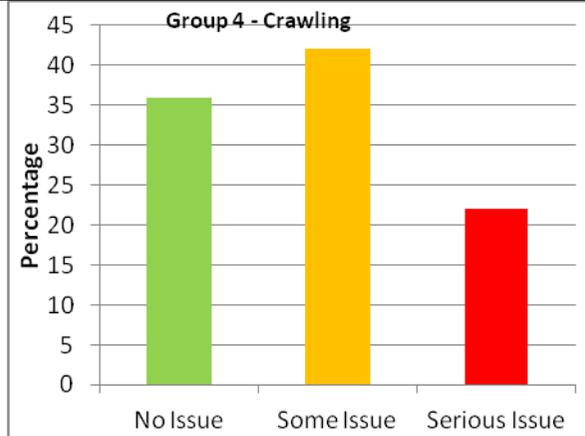
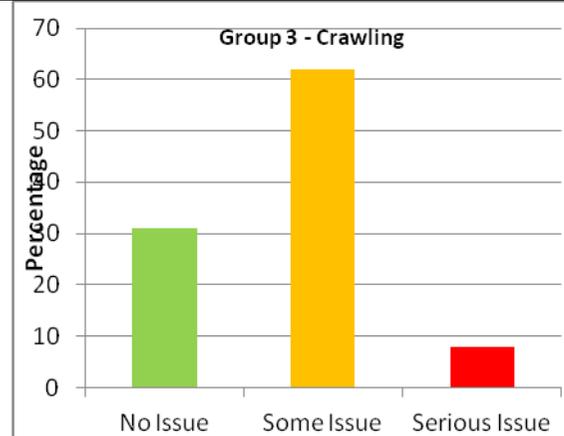
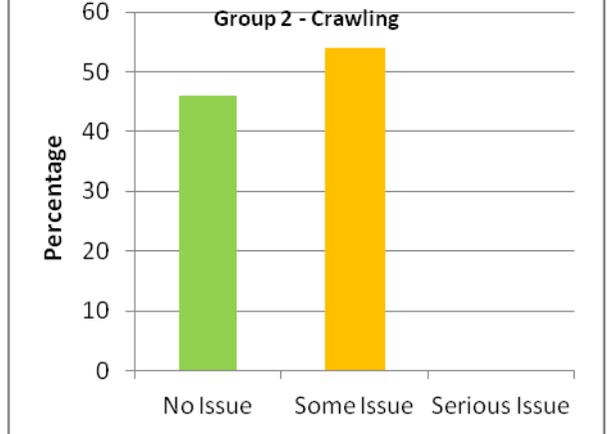
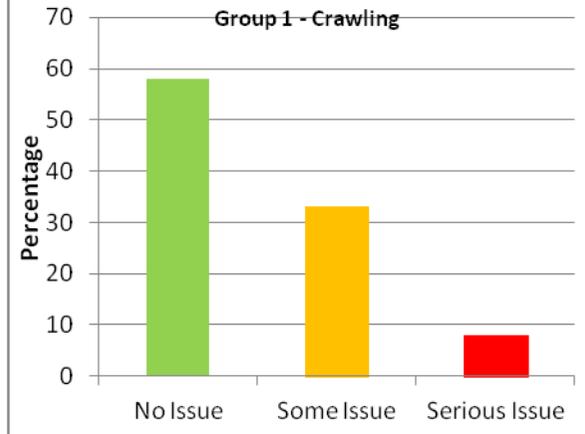
The data suggests that those who have serious issues with balance tend to be in the bottom two ability groups. They account for 41% of the 22 children in the bottom two groups and only 8% of the 25 children in the top two groups.

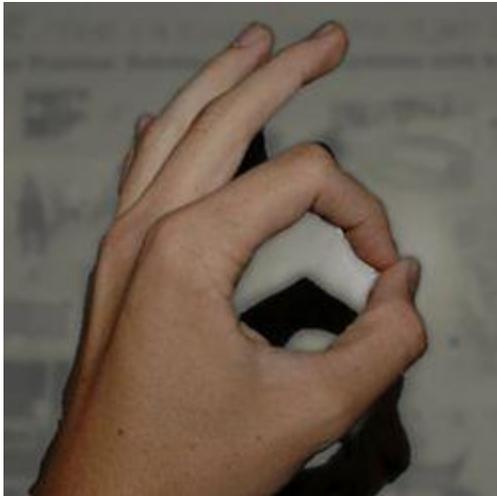


Crawling and Performance in Reception Class?

The 60 children in a reception class were divided by their teachers into five ability groups. Using 'Assessing Neuromotor Readiness For Learning' by Sally Goddard Blythe, the children's ability to crawl on their hands and knees was assessed. Their ability to crawl was divided into 3 levels - 'No Major Issue', 'Some Issues' and 'Serious Issues'.

The data suggests that those who have serious issues with crawling tend to be in the bottom two groups. They account for 23% of the 22 children in the bottom two groups and only 4% of the 25 children in the top two groups.





Finger/Thumb Opposition and Performance in Reception Class?

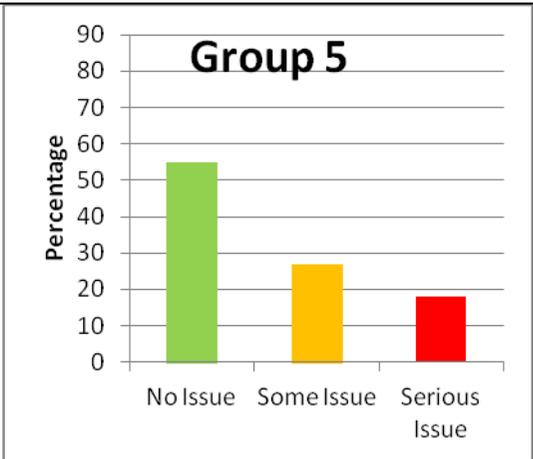
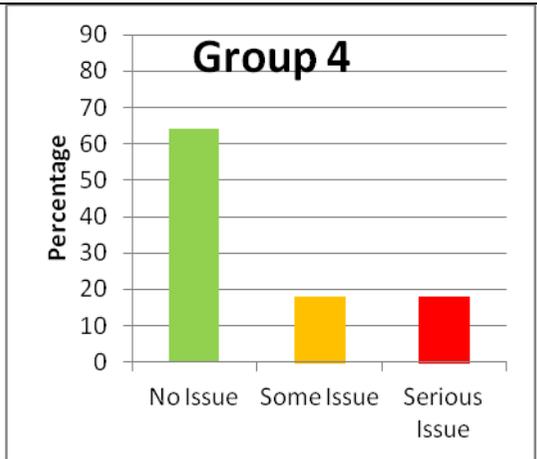
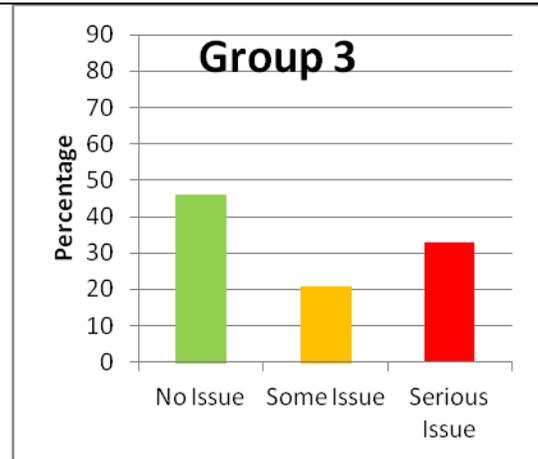
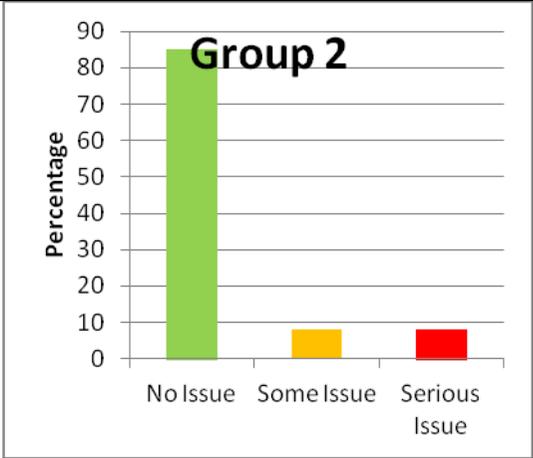
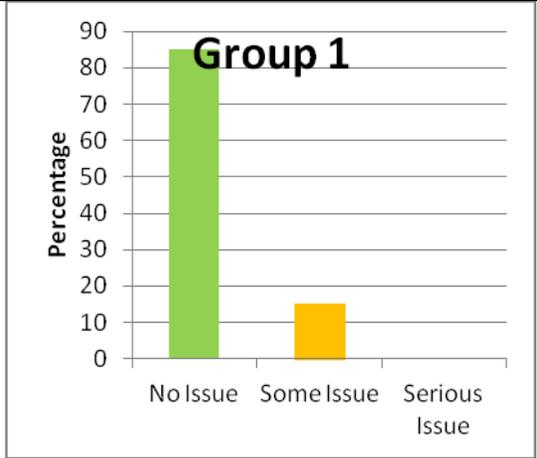
The ability to rotate and turn the thumb to touch and oppose the tips of each finger in turn is unique to primates. This ability in humans enabled us to build tools and develop writing. The layer of skin between the base of the thumb and index finger looks like a web, so the open space between the thumb and index finger is called web space. Having this web space gives us space to hold the pen or pencil in a tripod grip which gives us greater control and precision.

By about the age of 38 months a child should normally have developed finger/thumb opposition. For many children this continues to develop and improve until the age of 8 and for some children as late as 10. It is claimed that difficulty with finger/thumb opposition is one of the strongest indicators of learning difficulties in the early primary years (Dyslexia, reading and the brain. Alan Beaton. 2004).

The assessment outlined in 'Assessing Neuromotor Readiness for Learning' is intended for children about 18 months older than the reception children. However, given that 'learning to write' is a feature of reception in England it was decided to assess the children.

Finger/Thumb Opposition and Performance in Reception Class?

The 60 children in a reception class were divided by their teachers into five ability groups. Using 'Assessing Neuromotor Readiness For Learning' by Sally Goddard Blythe, the children's ability to oppose fingers and thumb. Their ability to oppose was divided into 3 levels - 'No Major Issue', 'Some Issues' and 'Serious Issues'.
 The data suggests that those who have serious issues with opposing tend to be in the bottom two groups. They account for 22% of the 22 children in the bottom two groups and only 4% of the 25 children in the top two groups.



References:

Goddard Blythe SA, 2012. Assessing neuromotor readiness for learning. The INPP developmental screening test and school intervention programme. Wiley-Blackwell. Chichester. ISBN 9781119970682

www.inpp.org.uk - NDD, primitive reflexes, research, literature, training, programmes, international affiliations, conferences etc	www.standards.dfes.gov.uk – search ‘primitivereflexes’ for a school based research project.	www.brainandbehaviour - link between cognitive development and balance and co-ordination
www.learning-connections.org.uk – Links between primitive reflexes and learning	www.spldc.org.uk –specific learning difficulties and NDD	www.centredge.com – the effects retained primitive reflexes can have on children
www.lcch.co.uk – ‘A window into dyslexia’ - primitive reflexes	www.stophyper.com – ADHD and primitive reflexes	www.stoppingadhd.com – ADHD and primitive reflexes

Other reading:

1. *‘Reflexes, Learning and Behaviour’* by Sally Goddard Blythe ISBN 0 9615332 8 5
2. *‘Physical Activities for Improving Children’s Learning and Behaviour’*, by Cheatum and Hammond ISBN 0 88011 874 1
3. *‘The Well Balanced Child’* by Sally Goddard Blythe ISBN 1 903458 6 3 3
4. *‘An Organic Basis for Neurosis and Educational Difficulties’* by Blythe & McGlown ISBN 0950670405
5. *‘What’s going on in there?’* by Lise Eliot ISBN 0 553 37825 2

Other Notes

This study was carried out at The Deanery C of E School, Sutton Coldfield