

Readiness for school requires much more than a child simply reaching the chronological age for school entry. To perform well in an educational setting, a child needs to be able to; sit still, focus attention on one task without being distracted by irrelevant environmental stimuli, hold and manipulate a writing instrument, and to control the eye movements necessary to maintain a stable image on the page, follow a line of print without the eyes jumping or losing their place and adjust visual focus between different distances at speed. These are physical abilities, which are linked to the development and maturation of motor skills and postural control.

Children who are delayed in certain aspects of their physical development are at risk of underachieving at school, not because they lack the intelligence or motivation to learn but because some of the physical skills which are needed to support and demonstrate intelligence in the classroom are under-developed. If underlying problems connected to the development of physical skills are not recognised, these children are at risk not only of underachieving but of experiencing frustration and developing associated 'secondary' behavioural signs.

What is the significance of primitive reflexes to education?

The presence of primitive reflexes at key stages in development provides acknowledged signposts of maturity in the functioning central nervous system.

Primitive reflexes are a group of reflexes which develop in the womb, are fully developed at birth and are gradually inhibited and transformed into more mature patterns and postural abilities during the first 6 months.

Primitive Reflexes and learning

There are three primitive reflexes that have been consistently shown to act as barriers to learning if they persist in a school age child:

- 1. The Asymmetrical Tonic Neck Reflex (ATNR)*
- 2. The Symmetrical Tonic neck Reflex (STNR)*
- 3. The Tonic Labyrinthine Reflex (TLR)*

The Asymmetrical Tonic Neck Reflex (ATNR)

This is the reflex that develops from about 18 weeks in the womb; rotation of the head to one side elicits extension of the arms and leg on the side to which the head is turned and retraction of the opposite arm and leg. This reflex is normally inhibited between four and six months of age. Retention of this reflex can interfere with subsequent motor abilities such as rolling over, commando style crawling, and control of upright balance when the head is turned to one side, eye movements and hand eye co-ordination. In a school aged child this may interfere with activities such as control of the hand when writing. If present in combination with other reflexes linked to the control of eye movement needed for reading, it can obstruct reading.

The Symmetrical Tonic Neck Reflex (STNR)

This reflex is present for a few days at birth, recedes and re-emerges between five and eight months at about the time a child is learning to push up and in preparation for crawling. It should only remain active for a short period of time as retention can interfere with the next developmental stages of crawling on hands and knees, sitting and standing posture and hand-eye coordination. If it fails to be suppressed, distribution of muscle tone in the upper and lower halves of the body is affected by the position of the head.

In a school age child this can be most readily observed in sitting position when writing. When the child looks down at the writing surface, the arms want to bend (and the legs extend), making the child lean further towards the writing surface, so that in some cases the child may end up almost lying on the desk to write. In this case, when the head is raised he/she can sit up, but each time he/she looks down the arms bend. If he/she extends the head the opposite reaction occurs – the arms straighten and the legs bend.

In addition to making sitting awkward and uncomfortable, retention of the STNR in a school age child can also affect hand-eye coordination skills, such as those needed to bring the hand to the mouth when eating. Children with residual STNR are often messy eaters who find it difficult to bring a fork, spoon or cup to the mouth without spilling its contents on the way! It can also interfere with the development of specific oculomotor skills, such as speed of accommodation (the ability to adjust focus between different visual distances) needed to copy from the board or track an object approaching at speed (catching a ball for example) and the vertical track needed to align columns correctly in maths and to judge heights.

The Tonic Labyrinthine Reflex (TLR)

The TLR is present at birth and is a primitive reaction to gravity which recedes as head control, muscle tone and postural control develop. When a new-born is held in the supine position, if the head is lowered below the level of the spine the arms and legs will extend, if the head is raised above the level of the spine, the arms and legs will flex. As head righting reflexes develop the TLR diminishes to be replaced by a series of more advanced postural reactions which facilitate correction of the head position in response to movement of the body or the environment.

Retention of the TLR beyond three and half years of age is associated with problems with balance, muscle tone, control of the eye movement needed for reading, writing, copying and maths, and can also affect spatial skills. This is because spatial awareness and the ability to manoeuvre and carry out cognitive operations in space depend first on having a secure physical reference point in space.

To try and address residual primitive reflexes, children in EYFS take part in regular daily activities based on a movement programme first developed by the INPP (Institute for Neuro Physiological Psychology). These movements help to develop and strengthen posture and balance and in turn help the child to be physical ready for the challenges of learning within a school environment.

If you want to find out more about these exercises and their benefits please do not hesitate to speak to a member of EYFS staff.