



## Muscle Reflexes and Communication

All babies are born with a number of reflexes that when triggered cause the central nervous system to perform certain actions. These actions are made up of movement patterns that are activated by a particular set of stimuli. For example, the sucking reflex, which supports feeding, is generated by touch on the baby's cheek causing the baby to turn his head and suck. Reflexes have value in supporting the young baby's survival. As babies grow, these early reflexes typically become suppressed and new life-long ones develop, e.g., pulling your hand away from something hot before it has actually burned. For children with cerebral palsy, early reflexes may persist, and for adults who experience neurological conditions or injuries, reflexes that were once suppressed may reappear. When someone has a reflex response, it usually lasts for approximately 10 seconds. It is helpful to understand the impact of reflexes as these may affect communication and may affect how people can access a communication aid.

### Some early reflexes that can persist in adulthood for those with neurological conditions

**Palmer grasp:** this is the automatic closure of the fingers in response to light touch and pressure. If it is a persisting reflex, it can be triggered by pointing or touching a screen. It can make handling objects very difficult as the fingers will close around an object or 'fist-up' before managing to grasp an object.

**Plantar (Babinski) reflex:** this is elicited by running fingers down the outer edge of the foot and results in a dorsiflexed large toe whilst the other toes fan out. The impact of this reflex, if it persists, is that it can make it difficult to place and keep the feet firmly on the ground. We do this to stabilise our posture when sitting. The reflex can also make standing and walking (without foot orthotics) impossible. The impact of this reflex is that it affects the ability to maintain a centred posture. For example, if you try sitting on a chair with your feet pointing downwards and off the ground, *how long is it before YOU feel very uncomfortable and unstable in your sitting position.*

**Moro (startle) reflex:** this is a very sensitive response resulting in a movement away from a stabilised position. Visually, it is your hands and arms flexing back and up. If it persists, it can be triggered by a loud voice, by accidentally crashing into the doorframe as you try to move

through it in your wheelchair, or by noisy movement like a bus going past the window. It causes the person to stop what they are doing or concentrating on.

**Sucking and bite reflexes:** the child immediately starts sucking on anything placed on the lips; or bites on anything touching the teeth. If this persists beyond infant-hood, the same reactions will occur when



anything is placed in or near the lips or teeth, making eating and swallowing difficult. If very severe, this can actually impact on the ability to articulate speech sounds.

**Asymmetrical tonic neck reflex (ATNR):** is initiated when laying babies on their back and turning their head to one side. The arm and leg of the side they are looking towards should extend while the opposite side bends. This reflex may make it challenging to coordinate looking at, and accessing a communication aid.

**Symmetrical Tonic Neck Reflex (STNR):** This reflex allows the baby to straighten its arms and bend its legs when it looks up. This reflex may make it challenging to coordinate looking at, and accessing a communication aid.

In addition to reflexes, children and young people with cerebral palsy may also struggle to develop postural reactions, these are predictable motor patterns that when working effectively help you to keep a stable position and maintain balance..

**Tilt reaction:** the ability to maintain an upright posture via trunk control when tilted well off the vertical plain, i.e. used to maintain balance and posture. If this does not develop, then the child or young person will not be able to lean or reach out without falling over.

**The parachute reaction:** a protective response (SAVE reaction). This usually results in the throwing out of the hands and arms. This is an important reaction when falling or leaning over, where your hands reflexively reach forward to break any fall or give you a balancing anchor point. If this does not work well then reaching for something just out of reach can be difficult and result in complete overbalancing and falling forward onto a table or the floor.

**The righting reaction:** a smooth rise or fall from lying, sitting, or standing. This is a postural correcting reflex. If it has not developed then postural supports may be in place, e.g., pelvic or chest strap supports. Without such support the individual may find it very difficult to maintain a strong core and balanced seating or standing position, especially if trying to manipulate a communication aid, or even if trying to concentrate on eye-gaze actions.

## **Reflexes and Communication**

For children and adults using AAC, it is important to consider how reflexes that have been retained or have re-emerged may impact on communication. It is also important to consider how communication may impact on reflexes.



**Triggering reflexes:** It is important to ensure that using a communication aid or system does not result in repeated triggering of the reflex movement patterns by positioning the communication aid too close to the body, too far away, too high, etc. Triggering reflexes can cause the individual to lose a stable seating position that has the knock-on consequence of affecting their ability to function. It may also slow down their communication access, requiring repositioning of themselves or their communication aid before they can carry on with their activities.

**Why reflex movement should not be used in accessing communication:** Sometimes it is possible to harness reflex patterns of movement to access a communication aid. While this might initially be effective, it can cause problems longer term. Repeatedly using reflex patterns may cause postural problems or cause muscular strains or injuries over time. It is therefore important to choose access methods that do not rely on reflex movement.

**Reflexes and equipment:** it will also be important to ensure equipment is positioned so that children can use it but so that it does not cause injury if a reflex movement pattern is triggered, e.g., hitting their hand against the mounting system.

### **What does this mean for communication aid assessments?**

It is important to have support from occupational therapy or physiotherapy for communication aid assessments for children who experience reflex movement patterns. The occupational therapist or physiotherapist can ensure that the assessment considers how to support the child's communication and overall physical needs including management of reflexive movement.

### **What can parents do?**

If you have concerns related to your child's reflexes and communication or if you notice changes over time as your child grows please share it with the other team members so these can be taken into account in the communication aid assessment.