

## Palmar Reflexes

Hand reflexes, hand/mouth integration, speech, feeding, chewing, swallowing, digestion - all get grouped together when we start talking about hand reflexes.

The grasp reflex or “Palmar reflex” begins in utero and should be integrated by six months. The grasp reflex can be seen as early as the fetal crossing pattern, as we will discuss, and continues to integrate during several steps in an NDM program.

In the young infant, you can observe it when the palm is stimulated and the fingers grasp around the stimulus. The infant’s thumb, itself, is a trigger when it touches the palm and wraps 4 fingers around it. This is the reflex that charms adults when the child holds on tightly to the adult’s finger and can’t let go. This reflex should disappear by six months of age, and it is facilitated in its integration by the developmental sequence.

When this reflex is retained beyond the six-month period, the child may have:

- Difficulty with fine motor in general, and with pen grip in particular. Pen grip may look like inserting the pen into a partially fistled hand, rather than holding it between the thumb and index finger with mature cortical opposition. This problem is the bane of schoolteachers who are trying to teach proper pen grip.
- Poor posture when the hands are doing a wide range of fine motor skills, such as writing, keyboarding, or playing the piano. Discreet use of each finger is critical for these skills.

In normal development, reflex integration specialists discuss how the hand naturally opens up finger by finger until the baby is able to articulate the forefinger to thumb position, or cortical opposition. But HOW this opening happens is usually not detailed. It is the PROCESS by which this unfolds that is revealed by and prompted by the Developmental Sequence, and which we, as NDM consultants, will be addressing in a much more natural, and we believe, effective way.

Traditionally reflex-only treatment for this involves bringing each finger individually to meet the thumb, trying to separate the function of each finger individually, rather than as a fist or ‘paw’. Sometimes this is done with a ball in the palm of the hand.

Another hand reflex, the Babkin reflex is also frequently noted in the literature on reflex integration. It emerges at about nine weeks of gestation and should be integrated by about four months postnatally. The Babkin reflex involves movement of the hand and mouth simultaneously. When the palm is stimulated it elicits a reflexive opening of the mouth. This is said to be, in many mammals, a mechanism for stimulating breastfeeding, as the hands (or paws in other mammals) stimulate the breast.

An unintegrated Babkin reflex can, like the grasp reflex:

- Interfere with development of fine motor skills, handwriting, etc.

- Impact reflexes related to eating, or lead to habits like sucking on clothes or other objects, teeth grinding, poor speech, and articulation problems
- Be seen in the child who opens and closes their mouth as they open and close scissors while cutting

At this time, we are going to trace the development of the human hand from fetal patterns to sucking, swallowing, chewing, and speech following the developmental sequence.

The first pattern that establishes the hand/mouth relationship is the **Fetal Crossing Pattern**, wherein the crossing and uncrossing of the hands under the chin and in the area of the mouth includes an occasional brushing of the hand across the mouth, seeking the thumb. Sometimes the thumb is tucked into the fist and sometimes the thumb is out and finds its target, the mouth, and the fetus achieves thumb sucking which begins as early as 10 weeks of gestation and may continue for two to three years after birth.

We see this same gesture that we witnessed as a preview in the **Fetal Crossing Pattern**, repeated in the neonate **Face Rubs** (one of the **Infant Patterns**). This can be the beginning of an important continuum of activities leading to good chewing, swallowing, and speaking skills.

Observe the resting neonate, perhaps swaddled in the nursery right after birth, whose fistled hands begin to move around the area of the trigeminal nerve, (which we often describe as the area on the face where, if you are male, you have a beard), stimulating the mouth in a way that may cause the infant to start salivating.

Note that the infant hand, with the thumb tucked against the inside of the fist, creates a stimulus at the acupuncture points in the palm for digestion, including the stomach, intestines, and colon. Salivation that ensues will trigger the baby to swallow, initiating peristalsis throughout the digestive tract, leading them to experience hunger. They arouse themselves and may begin crying. Their crying may become more vigorous and the pitch increases. At this time, they often start kicking their feet homologously, pumping against the stomach area and massaging the digestive system. All of this prepares them for eating.

The stimulation of the facial muscles through the **Face Rubs** (an **Infant Pattern** in your training manual) will also prepare the mouth for speech by stimulating the trigeminal nerve and ‘waking up’ the facial muscles that will later be used for articulate speech.

The palm/mouth relationship must be intense so that the child can ultimately feed itself. Of course, better awareness of the trigeminal area of the face also leads to more articulate speech.

As we move on and see the **Asymmetric Tonic Neck** pattern emerge, we are looking at a hand from which the index finger is beginning to emerge. The pattern turns the head toward that emerging index finger on the extended arm, important because of the index finger’s deep association with the emergence as an indicator of speech readiness.

The **Homolateral Pattern** will provide even more benefits for hand function. As the child lies in the homolateral pattern, the mouth and thumb are in line with each other, giving the baby the

ability to put that thumb in their mouth, which continues to establish the oral/motor and self-feeding skills, and also a visual awareness of the hand. Oral motor and visual motor skills are supported in this position.

As the hand brushes down beside the body, it is utilizing nature's way to open a fisted hand.

We are going to take a diversion to consider the lizard, perhaps a small green gecko resting in the sun. BUT, once alarmed by a vibration, their 'fingers' widen, spreading the webbing between and giving them maximum purchase against the sand or other surface, for the strongest and fastest forward push to move them out of harm's way.

In humans, this is happening at the level of the pons, which is colloquially known as the 'lizard brain'. It is ONLY in this tummy down position that we can get a natural and easy opening in someone with a pathologically fisted hand, such as from a stroke, TBI, or cerebral palsy (a TBI that occurred during the perinatal period).

This knowledge is crucial for those of you whose clients with fisted palms are wearing braces to force the hand into the open position. Because any muscle, when meeting resistance, will contract, it is deeply logical that bracing can lead to MORE fisting and STRONGER palmar reflexes. Removing braces and doing a **Homolateral** or a **Cross Pattern** with the hand strongly brushing, the full palm contacting the floor as the hand 'paints' down, is the best approach to a pathological grasp reflex.

Additionally, for these clients, we can add **Hand Patterns** with emphasis on the injured side.

Finally, for our mobile clients we can use walking patterns to get yet more control over the grasp and release that is associated with **Brachiating Walking Patterns**. These patterns work to get eyes and hand reaching for a goal, and the movement replicates the movement of monkeys swinging through the trees, where the knowledge of when to grasp and when to let go can be a matter of life and death.

In sum, the tools we have in a program of NDM that bring the hand up to full functioning, include, but are not limited to:

- Fetal Crossing
- Asymmetric Tonic Neck Pattern
- Face Rubs
- Homolateral and Cross Patterns
- Hand Patterns
- Brachiating Walking Patterns

If all of these tools have been used, there should be no further concern or need for intervention for palmar/grasp/Babkin reflexes.