### Rooting Reflex

**Onset age:** 20 wks gestation  
**Integration age:** 3 months  
**Position:** Supine/sitting with head in midline  
**Stimulus:** Stroke the corner of the mouth, upper lip, and lower lip  
**Response:** Movement of tongue, mouth, and head towards stimulus with opening of the mouth  

*Relevance:* Allows for searching for and locating the feeding source

### Suck - Swallow Reflex

**Onset age:** 20 wks gestation  
**Integration age:** 2-5 months  
**Position:** Supine with head in midline  
**Stimulus:** Place finger or nipple inside the infant's mouth  
**Response:** Lip closure followed by strong, rhythmical suck and finally swallow  

*Relevance:* Allows for ingestion of food (feedings)

### Moro Reflex

**Onset age:** 20 wks gestation (finger ext) - 41 wks (complete)  
**Integration age:** 5-6 months  
**Position:** Supine with head in midline  
**Stimulus:** Rapidly drop the infant's head backwards ~30°  
**Response:** 1. arm ext/abducted and hand opening  
2. arm flex/add  
* often with crying, shaking  

*Relevance:* Helps to break up the physiological flexion seen in newborns
TRACTION

**Onset age:** 20 wks gestation  
**Integration age:** 2-5 months  
**Position:** supine with head in midline  
**Stimulus:** grasp infant’s forearms and pull to sit  
**Response:** complete flexion of both UE including grasp  

*Relevance:* enhances momentary grasp


PLANTAR GRASP

**Onset age:** 20 wks gestation  
**Integration age:** 9 months  
**Position:** supine with head in midline  
**Stimulus:** apply pressure with your thumb on the ball of the infant’s foot  
**Response:** toe flexion  

*Relevance:* important for stance phase of gait

PALMAR GRASP

**Onset age:** 37 wks gestation (birth)  
**Integration age:** 4-6 months  
**Position:** supine with head in midline  
**Stimulus:** place your index finger in the infant’s palm from the ulnar side and give pressure to the palm  
**Response:** 1. “catching” or a quick flexion and adduction of the arms  
2. “holding” or reflexive grasp  

*Relevance:* enhance grasp

POSITIVE SUPPORT

**Onset age:** 35 wks gestation  
**Integration age:** 1-2 months (immature)  
**6 months (mature)**  
**Position:** hold infant upright under the arm around the chest (immature)  
upright standing (mature)  
**Stimulus:** bring infant downward allowing his feet to make contact with the support surface (immature)  
Contact on the ball of the foot on the support surface (mature)  
**Response:** partial WB with hips & knees slightly flexed (immature)  
Rigid extension of LE (mature)  

*Relevance:* allows for WB in upright
**SPONTANEOUS STEPPING**

- **Onset age:** 37 wks gestation
- **Integration age:** 2 months
- **Position:** Hold infant upright under the arm around chest
- **Stimulus:** Incline the infant forward
- **Response:** Automatic stepping

*Relevance:* Spontaneous stepping

**ASYMMETRICAL TONIC NECK (ATNR)**

- **Onset age:** 37 wks gestation
- **Integration age:** 4-6 months
- **Position:** Supine
- **Stimulus:** Use a visual stimulus to encourage the infant to follow and turn his head 180°
- **Response:** Extension of the extremities on the face side with flexion of the extremities on the skull side (fencer's position)

*Relevance:* Promotes visual regard for the hand

**SYMMETRICAL TONIC NECK (STNR)**

- **Onset age:** 4-6 months
- **Integration age:** 9-12 months
- **Position:** Ventral suspension, across your lap, or on all 4’s
- **Stimulus:** Head extension or flexion
- **Response:** Head extension → US ext, US flex
  Head flexion → US flex, US ext

*Relevance:* Breaks up total extensor posture and facilitates quadruped position

**TONIC LABYRINTHINE (TLR-C)**

- **Onset age:** >37 wks
- **Integration age:** 6 months
- **Position:** Supine
- **Stimulus:** Being in a supine position
- **Response:** Increased extensor tone

*Relevance:* Facilitates total body extension
**TONIC LABYRINTHINE (TLR-P)**

**Onset age:** 3+7 wks
**Integration age:** 4 months
**Position:** Prone
**Stimulus:** Being in the prone position
**Response:** Increased flexor tone

*Relevance:* Facilitates total body flexion

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**LABYRINTHINE HEAD RIGHTING REACTION**

**Onset age:** Birth - 2 months
**Integration age:** Persists
**Position:** Hold infant in vertical suspension with blindfold on (can also do with pull to sit)
**Stimulus:** Slowly tilt (~45°) to the side, forwards, or backwards → gravity is the stimulus
**Response:** Upright positioning of the head

*Relevance:* Orient’s head in space and maintains face vertically → head control

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**NECK RIGHTING**

**Onset age:** 4-6 months
**Integration age:** 5 years
**Position:** Supine
**Stimulus:** Fully turn the infant’s head to one side
**Response:** Log rolling of the entire body to maintain alignment with the head

*Relevance:* Maintains head and body alignment and initiates rolling

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**BODY RIGHTING**

**Onset age:** 4-6 months
**Integration age:** 5 years
**Position:** Supine
**Stimulus:** Flex one hip and knee towards the chest, adduct, rotate the pelvis, and hold briefly
**Response:** Segmental roll of the upper trunk to maintain alignment

*Relevance:* Facilitates trunk and spinal rotation and improved trunk control
**LANDAU**

**PROTECTIVE REACTION**

**UB - FORWARD**

**PROTECTIVE REACTION**

**UB - SIDWAYS**

**PROTECTIVE REACTION**

**UB - BACKWARDS**

**Onset age:** 3-4 months

**Integration age:** 12-24 months

**Position:** horizontal prone suspension

**Stimulus:** hold infant in horizontal prone suspension

**Response:** complete extension of the head, trunk, and extremities

*Relevance:* breaks up flexor dominance and facilitates prone extension

**Onset age:** 6-7 months

**Integration age:** persists

**Position:** vertical, sitting, or kneeling

**Stimulus:** suddenly tip the infant forward toward the supporting surface

**Response:** sudden extension of both UE’s, hand opening, and neck extension (to break the fall)

*Relevance:* enhances UE WB, reach, and grasp; protection from a fall

**Onset age:** 7-9 months

**Integration age:** persists

**Position:** sitting

**Stimulus:** suddenly tip the infant off balance to the side while in the sitting position

**Response:** sudden extension and abduction of the arm to the side

*Relevance:* support the body for unilateral use of the opposite arm; protection from a fall

**Onset age:** 9-11 months

**Integration age:** persists

**Position:** sitting

**Stimulus:** suddenly tip the infant off balance backwards while in the sitting position

**Response:** backward arm extension or arm extension to one side

*Relevance:* unilateral facilitates spinal rotation; protection from fall
PROTECTIVE REACTION
LE - SIDWARDS (STAGGERING)

Onset age: 15-18 months
Integration age: persists
Position: Standing
Stimulus: push the child off balance
Response: lateral, forward, or backward stepping, depending on the direction of the push

*Relevance: balance and protection from falling

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TIMELINE

onset age before birth

20 Wks gestation 2 months 4 months 6 months 9 months

ROOTING

SUCK - SWALLOW

MORO

TRACTION

PLANTAR GRASP
onset age after birth

- Birth
- 2 months
- 4 months
- 6 months
- 1 year
- 5 years

- Palmer Grasp
- ATNR
- STNR
- TLR-C
- TLR-P
- Labyrinthine Head Righting Reaction
  - Neck Righting
  - Body Righting
  - Landau

- Protective Reaction UE - Forward
- Protective Reaction UE - Sideways
- Protective Reaction UE - Backwards
- Protective Reaction LE - Sideways (Staggering)