



POSNA

The Core Curriculum

Developmental milestones

Objectives

1. Describe the neurodevelopmental exam of the term newborn
2. List essential "normal" developmental milestones up to age 3

Discussion

A comprehensive knowledge of "normal" is necessary before one can assess deviations from normal. There is an extensive literature on developmental pediatrics, from which is distilled an essential knowledge base for the orthopaedic surgeon.

The term newborn should have the following reflexes:

- 1) Sucking reflex - elicited by placing a finger into the mouth.
- 2) Eye blinking to a sharp noise or bright light.
- 3) Moro. - elicited by holding the baby 45 degrees to the bassinet and letting the head fall back, followed by abduction of the shoulders and extension of the elbows.
- 4) Grasp - elicited by placing the examiner's finger into the palm from the ulnar side, followed by grasp of the baby's fingers around the examiner's finger. The examiner's finger is raised toward the ceiling, the baby holds the examiner's finger and momentarily hangs on.
- 5) Withdrawal reflex - The lower limb flexes and moves away from a noxious stimulus on the plantar surface of the foot.
- 6) Plantar response - Stimulating the distal portion of the lateral foot elicits plantarflexion.
- 7) Foot placement reaction - Placing the baby against the edge of a table so the anterior distal tibia is against the table; the baby's leg being stimulated steps onto the table.
- 8) Extensor thrust - When the plantar surface of the foot is placed against a table, the legs extend.
- 9) Tonic neck - Rotating the head to one side elicits abduction of the shoulder and extension of the elbow on the side toward which the face is rotated, and abduction of the shoulder with flexion of the elbow on the side toward which the occiput is facing (fencer's position). One rarely sees full extension of the elbow.
- 10) Neck righting reflex - Turning the head causes the body to turn toward the same direction.

The following are some essential milestones:

- Birth - with ventral suspension (baby held off the table by the examiner's hand under the abdomen), elbows flex, hips partly extend, head dangles.
- 6 weeks - with ventral suspension, head momentarily up to level of trunk.
- 12 weeks - with ventral suspension, head held above level of trunk.
- 6 months - when prone, weight on hands. Sits with support. Holds bottle.
- 9 months- pulls to standing. Uses opposition of thumb to finger to pick up small object.
- 12 months - walks independently or with hand support. Begins to throw objects to floor.
- 2 years - climbs steps, kicks ball, turns door knob.
- 3 years - stands on one foot for a few seconds. Climbs stairs, one foot per step.

Reference

1. Illingworth RS. The development of the infant and young child. Normal and abnormal. 9 ed. Edinburgh: Churchill Livingstone; 1987.