

Recognizing Early Motor Delays

A Comparison Examination of 6 Month Old Infants

Typical

Atypical

Sitting

- Shows stable head and trunk control with active extension through the thoracic spine
- Reaches with one arm at a time, using a wide base of support in the lower extremities



- Struggles to maintain head upright and in midline; cannot activate vision or explore because so much effort is required to remain upright
- Must be supported high up in the chest for stability
- Exhibits decreased trunk extension and freedom to reach



Horizontal Suspension

- Demonstrates full, sustained extension in the neck and upper thoracic spine, down through the hips and legs



- Lifts head in midline and extends through the upper thoracic spine only briefly
- Does not exhibit extension through the spine and hips



Protective Extension

- Easily and quickly brings arms forward in a full protective response when tipped toward the surface
- Props immediately on one upper extremity when reaching for a toy



- Does not bring upper extremities forward to the surface in a protective response
- Displays inadequate antigravity neck and trunk strength to free the arms to come forward



Standing

- Exhibits immediate sustained weight bearing on extended lower extremities; turns head freely to look around
- Keeps hips slightly flexed and somewhat behind the shoulders
- Uses upper extremities to assist in stabilizing the trunk



- Fails to initiate or sustain active weight bearing when placed in supported standing
- Lacks necessary antigravity head and trunk control
- Unable to align head, trunk, hips, knees and feet in the vertical



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Typical

Atypical

Supine

- Able to symmetrically lift and sustain upper and lower extremities against gravity
- Demonstrates increased antigravity control of the muscles of the trunk and increased freedom of extremity movement
- Exhibits quick visual-motor response of looking, reaching, grasping and transferring objects



- Shows improved ability to hold head and trunk in midline, but still without adequate antigravity movement
- Has excessively abducted and externally rotated upper and lower extremities, with movement primarily on the surface
- Appears visually interested in objects but unable to reach and grasp



Sidelying

- Rolls independently and easily from supine through sidelying into prone in either direction
- Shows active head righting and upper extremity pushing against the surface to raise body while reaching with the other hand



- Requires assistance from examiner in rolling from supine to sidelying
- Unbalanced neck, shoulder and back extension prevents use of the arm to assist in the rolling maneuver



Prone

- Bears weight on extended arms and forearms, with extension into the lumbar spine and lower extremities
- Shows emerging upper extremity control in weight shifting for reaching, grasping and playing
- Grasps toy towards thumb side of palm

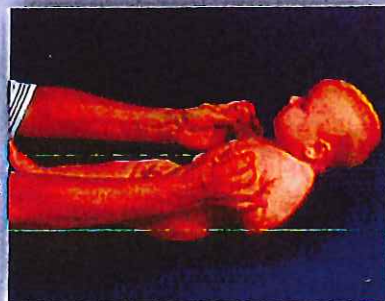


- Does not choose prone position for play due to decreased head, shoulder and trunk control
- Has decreased upper extremity power, preventing weight shift towards the pelvis necessary for freedom in the upper extremities
- Positions elbows behind shoulders, preventing head and trunk lifting



Pull to Sit

- Responds quickly and assists in the maneuver by actively flexing neck and lifting head
- Also uses activity in the upper extremities and abdominals to assist
- Shows good symmetry in the head, neck and upper extremities



- Assists minimally in the pull to sit maneuver
- Demonstrates complete head lag until the upright position
- Does not assist with upper extremity pulling



Recognizing Early Motor Delays

A Comparison Examination of 4 Month Old Infants

Typical

Atypical

Sitting

- Shows good head control and chin tuck, with head in midline
- Requires support only at hips and pelvis; has extension to mid-thoracic spine
- Begins to move in anterior-posterior planes and comes back from forward flexion at the hips into upright sitting



- Does not sustain head lifting; cannot turn head to look side-to-side
- Must be held high under the armpits for support
- Uses extremity posturing to compensate for decreased proximal strength



Horizontal Suspension

- Able to keep neck and trunk extended with head upright to 45 degrees, steady and in midline
- Shows trunk extension into lumbar spine and scapular adduction
- Freely moves arms and legs



- Able to hold head up briefly but cannot maintain it in midline
- Cannot sustain thoracic trunk extension and does not show hip extension
- Cannot maintain trunk extension while moving arms and legs



Protective Extension

- Displays extension through neck, trunk and hips that is maintained during forward tilting
- Cannot bring arms fully forward to surface because they are being used to sustain extension



- Unable to sustain strong neck, trunk and hip extension during forward tilting
- Uses excessive asymmetry and flexed arms to sustain extension to avoid hitting his head



Standing

- Keeps hips just behind shoulders
- Has active extension into lower thoracic and lumbar spine, but no full hip extension
- Can sustain standing posture; requires minimal support at lower trunk to aid in balance



- Requires support in the upper thoracic area to sustain standing
- Intermittent extension used to produce head lifting
- Shoulders remain well forward of hips
- Lacks adequate hip and trunk control for sustained weight bearing



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Recognizing Early Motor Delays

A Comparison Examination of 4 Month Old Infants

Typical

Atypical

Supine

- Exhibits midline and symmetry of head, eyes, arms and legs
- Shows visual engagement and reaches out against gravity
- Demonstrates frequent antigravity extremity movement, dissociating from a more stable trunk



- Displays asymmetry of head and extremities, with head tilted and body curved
- Does not show a balance between extension and flexion
- Moves extremities randomly, but without expected antigravity movement
- Is not visually engaged and does not track object



Sidelying

- Uses upper arm and dissociated lower extremities to assist in facilitated roll
- Sustains sidelying posture with a balance of trunk flexor and extensor muscles
- Lifts head and upper trunk off the surface in preparation for independent rolling



- Exhibits sluggishness in top arm during facilitated roll
- Does not sustain sidelying posture; has inadequate control in position
- Cannot lift head and upper trunk off support surface



Prone

- Brings shoulders and upper arms forward with elbows in front of shoulders
- Shows progression toward lower extremity extension and adduction
- Moves arms forward to reach for an object; turns head freely to follow object
- Displays extensor activity into the lumbar spine



- Has flexed hips which shifts weight forward while keeping elbows behind shoulders
- Uses only neck extension instead of forearm weight bearing; head lifting is unsustainable
- Does not have the capability to shift weight onto lower extremities



Pull to Sit

- Maintains head in midline without head-lag and with good chin tuck
- Lifts legs and activates trunk muscles to assist in maneuver
- Pulls forward with both arms and abdominals to assist further in pull to sit



- Demonstrates head-lag and cannot sustain head lifting once upright
- Does not pull with arms; no upper extremity participation
- Appears not to anticipate movement toward sitting



Recognizing Early Motor Delays

A Comparison Examination of 2 Month Old Infants

Typical

Atypical

Supine

- Maintains head in midline for brief periods
- Locates objects visually and tracks from left to right
- Begins to show antigravity movements of upper and lower extremities
- Not yet able to reach and grasp toys



- May show more asymmetrical movement with predominance of head to one side; or strong asymmetrical tonic neck reflex (ATNR)
- Difficulty visually tracking, may only track to one side or only to midline
- Decreased ability to generate upper and lower extremity antigravity movements
- Longer periods of inactivity



Sidelying

- Able to lift head and upper trunk during facilitated roll, showing lateral headrighting
- Begins to balance activity of trunk flexor and extensor muscles
- Ability to change from predominant use of flexors to use of extensors as position requires

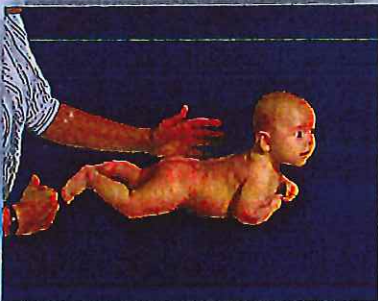


- May be unable to right head during facilitated rolling
- May look more competent in sidelying, therefore important to observe baby in all eight positions

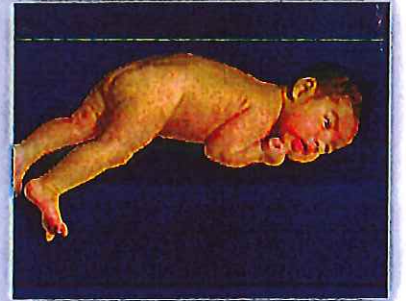


Prone

- Head lifting to 45 degrees and extension through upper thoracic spine
- Hips and knees begin to move from flexed "newborn" posture into extended, abducted position, which allows head and trunk lifting
- Elbows typically not directly under the shoulders until 3 months



- Posture looks more like a newborn; infant does not show hip extension; hips and knees remain in flexed abducted posture.
- No independent head lifting; can move head only with assistance



Pull to Sit

- Head-lag is typical until the infant is about 15 degrees from upright.
- Uses shoulder elevation and elbow flexion to assist
- Able to engage neck muscles to sustain midline head control when upright
- Good extension through the cervical and upper thoracic spine



- May exhibit head-lag through the entire pull to sit maneuver.
- Poor head control when in upright sitting
- Little muscle activity in the upper extremities or cervical spine
- When upright, rounding of the thoracic and lumbar spine



Recognizing Early Motor Delays

A Comparison Examination of 2 Month Old Infants

Typical

Atypical

Sitting

- Head is aligned with ear directly over the shoulder
- Holds and sustains posture with assistance
- Head turning may or may not be present at 2 months, but should be seen by 3 months



- Needs more support to sustain sitting posture
- Inability to achieve and sustain head lifting in upright position
- Little to no antigravity arm activity

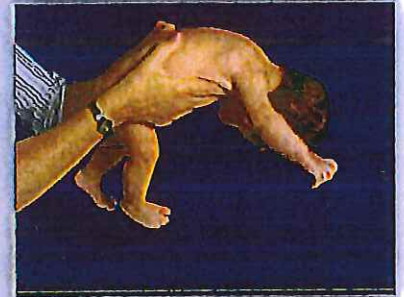


Horizontal Suspension

- Able to activate adequate neck and trunk extension to sustain posture
- Can maintain brief periods of head control, but may not be able to hold the head in midline



- Difficulty or inability to activate neck or upper thoracic extensors to lift head
- May try to use arm and leg movements to sustain posture



Protective Extension

- Aware of being tilted forward; increases head and neck extension
- Will not be fully able to bring arms forward for full protective response until 6 months

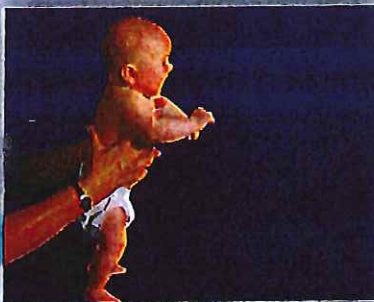


- Unable to generate antigravity head and trunk activity



Standing

- Able to sustain weight on lower extremities with support at the trunk
- Typically shows intermittent bouts of extension and flexion
- Good vertical alignment from head through trunk and feet



- May support little if any weight on feet
- Little or no intermittent muscle activity to attain or maintain standing

