

ASSESSING TONE IN YOUNG INFANTS

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TONE VS. STRENGTH

- WHAT IS TONE?

- *Resistance of muscles to passive stretch*
- *Neonates are normally flexor-dominant for first three months*

- WHAT IS HYPOTONIA?

- *Decreased resistance of muscles to passive stretching*
- *As opposed to muscle weakness = decreased power/strength*
- *Hypotonia can be present with normal strength*



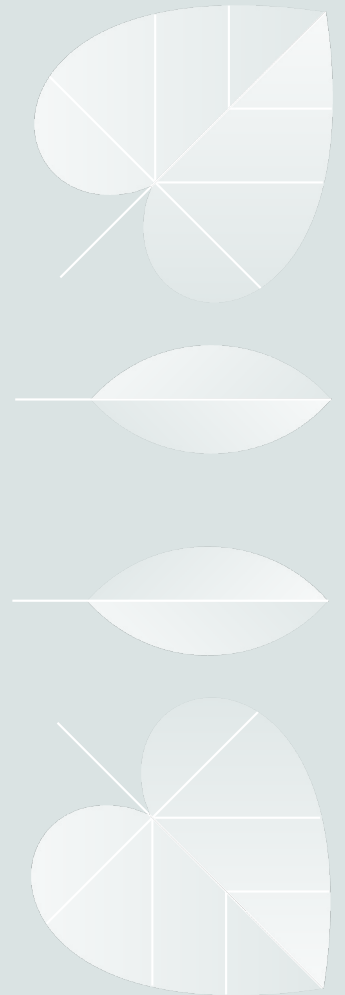
TONE VS. STRENGTH

- HYPOTONIA DOES NOT INDICATE SPECIFIC LEVEL OF DYSFUNCTION
 - *Could involve brain, brainstem, spinal cord, peripheral nerves, neuromuscular junction, and/or muscle*
- REFER ALL CASES OF SUSPECTED HYPOTONIA TO PEDIATRIC NEUROLOGIST



NEWBORN AND INFANT NEUROLOGICAL EXAMINATION WEBSITE

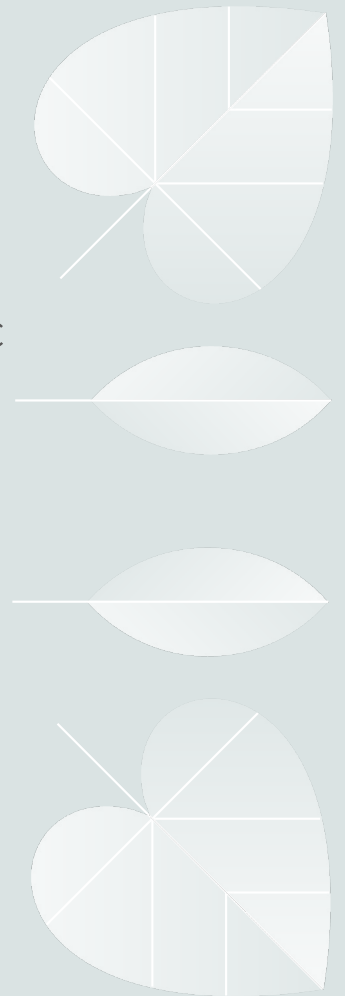
- http://library.med.utah.edu/pedineurologicexam/html/home_exam.html
- From the University of Utah School of Medicine
- Video clips of different aspects of pediatric neurological examination, broken down by age group
- Includes primitive reflexes, cranial nerve evaluation, motor, tone, DTRs, etc.



NEWBORN AND INFANT NEUROLOGICAL EXAMINATION WEBSITE

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http://library.med.utah.edu/pedineurologicexam/html/home_exam.html



ASSESSING TONE IN YOUNG INFANTS

Upper Extremity

Arm Traction

Scarf Sign

Arm Recoil

Vertical Suspension

Lower Extremity

Leg Traction

Popliteal Angle

Heel-to-Ear

Leg Recoil

Neck

Neck Tone

Head Lag / Head Control



ASSESSING TONE IN UPPER EXTREMITIES

- Arm Traction
- Scarf Sign
- Arm Recoil
- Vertical Suspension



ASSESSING TONE IN UPPER EXTREMITIES

- Arm Traction
 - *Elicit* - gently extend elbow and lift until shoulder raises slightly off table
 - *Response* - resists movement and maintains some flexion in elbow
 - *Abnormal* - no resistance, and full elbow extension



ASSESSING TONE IN UPPER EXTREMITIES

- Scarf Sign
 - *Elicit* – move arm across chest towards opposite shoulder
 - *Response* – hand doesn't cross shoulder, elbow doesn't cross center
 - *Abnormal* – hand/elbow travel too far (low shoulder girdle tone)



ASSESSING TONE IN UPPER EXTREMITIES

- Arm Recoil
 - *Elicit* – after folding arms to chest and holding for 5 seconds, quickly extend elbows and release
 - *Response* – arms recoil back to elbow flexion
 - *Abnormal* – poor recoil (low tone), asymmetrical response (brachial plexus or erb's palsy)



ASSESSING TONE IN UPPER EXTREMITIES

- Vertical Suspension
 - *Elicit* – doctor suspends baby between hands in upright position by holding baby upper trunk and under arms
 - *Response* – doctor should be able to easily maintain grip on baby
 - *Abnormal* – baby begins to slip through doctor's hands and doctor must work to maintain grip on baby



ASSESSING TONE IN UPPER EXTREMITIES

- Arm Traction
- Scarf Sign
- Arm Recoil
- Vertical Suspension



ASSESSING TONE IN LOWER EXTREMITIES

- Leg Traction
- Popliteal Angle
- Heel-to-Ear
- Leg Recoil



ASSESSING TONE IN LOWER EXTREMITIES

- Leg Traction
 - *Elicit* – same as arm traction
 - *Response* – resistance and maintains some knee flexion
 - *Abnormal* – no resistance, and full knee extension



ASSESSING TONE IN LOWER EXTREMITIES

- Popliteal Angle
 - *Elicit* - from full hip flexion (thigh on abdomen), attempt to extend knee
 - *Response* - unable to extend knee beyond 90 degrees
 - *Abnormal* - knee extension beyond 90 degrees indicates hamstring hypotonia



ASSESSING TONE IN LOWER EXTREMITIES

- Heel-to-Ear
 - *Elicit* - attempt to bring heel to ipsilateral ear
 - *Response* - normal resistance at hip and knee; heel does not approach ear
 - *Abnormal* - heel reaches ear



ASSESSING TONE IN LOWER EXTREMITIES

- Leg Recoil
 - *Elicit* – same as arm recoil
 - *Response* – same as arm recoil
 - *Abnormal* – poor recoil, indicates either hypotonia or abnormal extensor tone



ASSESSING TONE IN LOWER EXTREMITIES

- Leg Traction
- Popliteal Angle
- Heel-to-Ear
- Leg Recoil



ASSESSING TONE IN NECK

- Neck Tone
- Head Lag / Head Control



ASSESSING TONE IN NECK

- Neck Tone
 - *Elicit* – in supine position, rotate head
 - *Response* – cannot rotate chin beyond shoulder
 - *Abnormal* – head rotates so chin is beyond shoulder



ASSESSING TONE IN NECK

- Head Lag / Head Control
 - *Elicit* – pull arms to move baby from supine to sitting
 - *Response* – able to eventually get head upright (some head lag is normal); able to maintain upright position for several seconds
 - *Abnormal* – cannot bring head to upright position and/or cannot maintain upright posture



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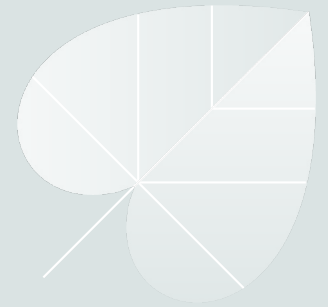




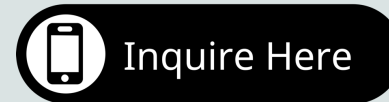
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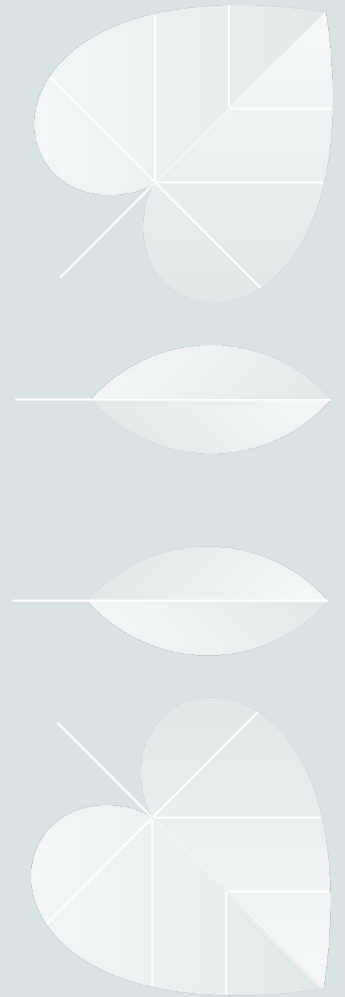
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