

Second Edition

Approach to Treatment of the Baby



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Introduction

The baby has a strong desire to move. Movement brings pleasure to the body and gives definition and organization. The baby learns that the body is physically separate from other aspects of the world and is driven to move further and further against gravity. The baby moves until exhausted and then begins again.

The material in this book is designed to support the clinician working with babies and young children during the first two years of life who have suspected or confirmed neuro-motor disorders. The focus is on the development of postural control and its relationship to the development of functional motor skills. The following are three suggestions for the clinician.

Know typical development. The study of motor development includes knowledge of current theories of motor control, motor development, and motor learning. From a Neuro-Developmental Treatment (NDT) perspective on which this book is based, it also includes in-depth knowledge of how posture and movement interact as the infant develops movement in all three planes (sagittal, frontal and transverse) during the first year of life. NDT is a therapeutic approach created by Berta Bobath, a physiotherapist, and Karl Bobath, M.D. in 1942 for the management of cerebral palsy. Over the years NDT has grown and developed, incorporating current scientific theory to support clinical strategies. The study of NDT will assist you in understanding how to support the child in developing efficient and safe movement.

Efficient movement requires adequate postural control. Maintaining an erect spine against gravity while leaning forward to reach for a toy is an example of a postural adaptation which supports function. Postural activity is changeable. It can be self-generated or initiated by external perturbation. Many postural adaptations are anticipatory in nature and evidence suggests that these anticipatory strategies are present early in the developing infant.

In order to develop an effective treatment plan, a thorough assessment is required. This assessment starts with the functional activity strengths of the baby as well as awareness of the functional limitations. What is the baby now doing that you can build upon to promote a higher level of motor control and function? In the case of the infant, motor control may relate to the ability of the baby to generate random movements early on and organize the respiratory system for feeding and sound play. It may relate to the ability to bring the hands to the feet or the capacity to see an interesting object, move toward it and explore it. Knowing typical development helps us to know which aspects of atypical movement and postural control are interfering with acquisition of important skills. Remaining aware of how the baby acquires motor control, how various systems within the human body work, especially in terms of the neuro-motor system, biomechanics and kinesiology, will help you pinpoint problem areas.

Considerations in Assessment and Treatment Planning from an NDT Perspective

- 1) Start on the parent or caregiver's lap-watch/observe what the baby can do first. This helps set the stage for building on the baby's strengths.
- 2) Determine the parent or caregiver's primary concerns early in the process- what are their top priorities in regard to function and the impact of the baby's problems on everyday life.
- 3) As you uncover the functional limitations of the baby begin to ask yourself the question why? Why can't the baby independently sit, roll over, reach for an object, visually focus? This will help you determine areas for more in-depth examination.
- 4) Examination: data collection through interview, observation, handling, testing.
 - a) Observation of ineffective posture and movement e.g. global impairments that affect multiple systems. For example: is there asymmetry throughout the body? Does the baby have difficulty initiating movement and weight-shift in a variety of positions? Is there a lack of head and trunk control?
 - b) Systems Review- gather data in specific areas e.g. Neuro-motor System, Sensory Systems, Musculoskeletal System, etc. to determine specific system impairments.
 - c) Utilize appropriate tests/measures based on the information they will provide e.g. developmental levels, musculoskeletal information (ROM), functional activity limitations, participation etc.
- 5) Evaluation: In-depth analysis of data collected. Linking of functional activity limitations with priority elements of ineffective posture and movement and systems impairments. Finding the lowest common denominators that influence more than one functional activity limitation assists in determining which treatment strategies to use.

Treatment Planning:

Quantify priority functional activity outcomes into measurable short and long term functional goals.

Prioritize impairments and elements of ineffective posture and movement that underlie functional activity limitations.

Determine impairment related objectives necessary to achieve the functional outcomes.

Develop a treatment plan that includes appropriate frequency and duration of treatment when possible that reflects the individual needs of the baby and the family including participation in family life.

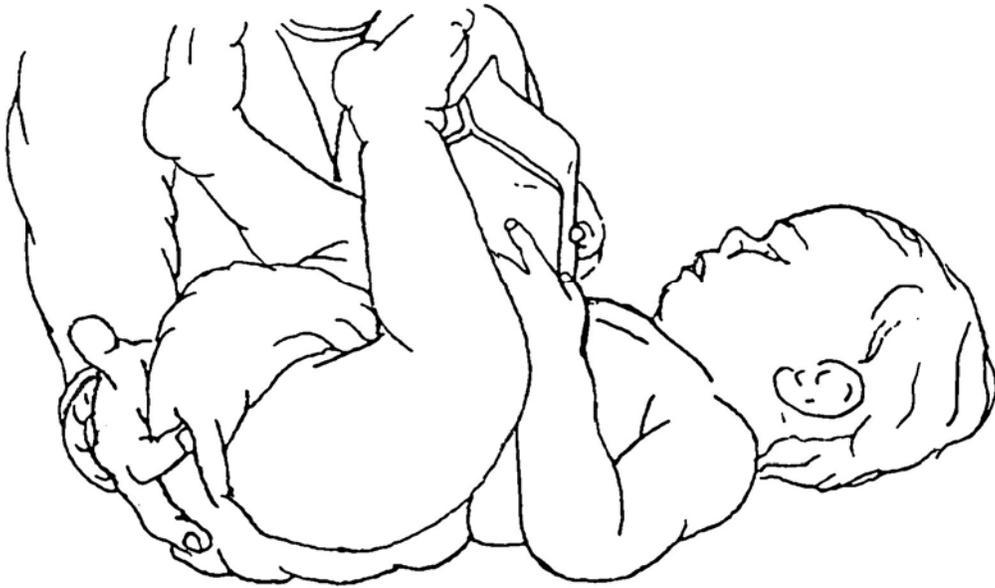
Recognize that some babies may require long-term intervention, consider flexible treatment planning that allows for “episodes” of care.

Remember that although we need to fully understand typical development, treatment is not about following the developmental sequence. Babies with neuro-motor impairments seldom will be able to “catch up” because their problems are not just delays in motor development. The assessment process can help us determine why babies move the way they do and help parents further refine their priorities based on the individual strengths and needs of the baby.



In typical development, infants begin to develop capital flexion at 3 to 4 months of age. This aspect of head control is critical to counterbalance the cervical extension. Capital flexion facilitates the baby's development of graded ranges of isolated head motion in the sagittal plane. It is an essential component for downward visual gaze and isolated control of the head separate from the neck.. Babies with atypical motor development have difficulty developing capital flexion and tend to utilize cervical hyperextension and shoulder elevation in effort to sustain their head in an upright position.

The therapist is using light, sustained traction between her hands to elongate spinal extensors in preparation for antigravity flexor control. This light traction is never forceful. If the baby begins to extend or rotate his head the therapist can follow those movements while maintaining the subtle traction.



Once elongation is achieved, the therapist can then support the pelvis in an elevated position, amplifying the posterior pelvic mobility. The therapist can again use the subtle traction input to bias the baby toward flexion. At this point the therapist waits for the infant to bring his legs closer to his hands and mouth. Engaging the baby in play in this position, by bringing attention to the lower extremities through tactile, visual or auditory means, is encouraged. *If the baby initiates rolling the therapist can follow this movement. If the baby does not roll but becomes active the therapist can facilitate rolling to the side or prone.*



The dynamic surface of a therapy ball is used here to facilitate forearm weight bearing and active head and upper trunk control. The baby can be placed more horizontally on the ball or at an angle as seen here depending on the influence of gravity desired. The therapist places her hands around each humerus providing input towards neutral rotation. Her thumbs are able to inhibit the tendency toward humeral extension and both hands can provide gentle compression towards the weight bearing surface. When the baby becomes posturally active, the ball can be moved laterally to provide vestibular input and further challenge the postural muscles in a frontal plane.



Many babies begin to stand in their cribs or next to furniture by 7-9 months of age. Standing provides opportunities to further develop postural control with a narrower base of support. Initially of course babies use arm support, and they begin cruising at furniture as well as standing. As their postural control increases in all planes, they free their hands and eventually stand independently. This process occurs over several months in preparation for independent walking.

Babies with neuromotor disorders may have difficulty attaining standing. Using standing as a treatment strategy may be necessary long before they are able to pull to stand and cruise. In this picture a caregiver supports the baby's arms while the therapist facilitates a weight shift in a step position. The position of the arms with humeral external rotation and abduction assist the postural muscles of the shoulders and spine. The step position helps minimize over-recruitment of leg muscles such as adductors/hamstrings and can begin to work on components of gait, which the child may use either independently or with an assistive device.