

Prone Development

The Case for Tummy Time

By Timmie Wallace, PT, NDT/Bobath Coordinator-Instructor

Doctors have noted that babies no longer follow the popular baby-book timetable for head lifting, turning over, and crawling at 6-8 months according to an April 29, 2001, article in the *New York Times*. Some doctors are seeing increasing numbers of babies who never crawl at all, going directly from sitting to toddling.

The *Times* story refers to a British study directed by Dr. Peter Fleming of the University of Bristol and an American study led by Dr. Beth Ellen Davis, a developmental pediatrician at the Madigan Army Medical Center in Tacoma, Washington, both published in 1998 in *Pediatrics*. The study corroborates the fact that real changes are occurring in infant development.

According to *Times* authors Gina Kolata and Howard Markel, developmental specialists attribute the change in behavior to an “unexpected and unintended consequence” of the 1994 public health campaign to prevent sudden infant death syndrome. Led by the American Academy of Pediatrics and the US Public Health Service, doctors began recommending that parents put babies to sleep on their backs. The *Times* cites a report from the Pediatric Academy that states, “The percentage of American babies sleeping on their backs has increased to more than 70 percent today from 20 percent before the campaign.”



The studies' researchers emphasize that there seems to be no medical consequence to this developmental change. The babies are normal in every other way, and they sit up and walk at the same time they always did. But although most doctors use language skills as a marker of development, parents are concerned by the lack of crawling because they have been educated to focus on physical milestones of rolling over, crawling, and walking.

COMMENTS FROM A NEURO-DEVELOPMENTAL THERAPIST

I think the information in the *New York Times* article is worthy of discussion.

The importance of “tummy time” or prone development cannot be understated. Unless babies are provided the opportunity to be on their tummies (prone) from the first days and week of life, they may have difficulty accepting “tummy time.”

Here are my thoughts on why “tummy time” is so important:

1. The typical full term newborn is in a posture of flexion. When on his/her tummy, there is pressure on the face and upper trunk that is needed to ‘organize’ the baby’s oral-motor and respiratory system.
2. As the baby turns his head from side to side in prone, he must shift his weight slightly posteriorly in order to succeed in that movement. This helps to further organize the oral motor area and also begins to mechanically mobilize the thoracic spine, which, at birth, is in a position of flexion.
3. As the first few days and weeks go by, the baby is able to lift and turn her head to either side with ease. This is, in part, due to the increased mobility of the upper thoracic spine (toward extension), in part due to strength of the neck and upper shoulder girdle muscles (flexors and extensors), and in part due to the vestibular and visual system reinforcement.
4. Once the baby is able to hold her head in vertical, she becomes less interested in being on her tummy, as the world is available to her from another perspective. (This happens typically by 4-6 weeks of age in upright postures while held with head/trunk vertical). Babies typically don’t have the same degree of face vertical, eyes horizontal control in prone until 9 to 12 weeks of age. It is

very difficult for babies to be happy and content being prone (tummy time) if they have not had that experience from the beginning.

5. Babies develop many systems simultaneously: musculo-skeletal, sensory-perceptual, social-emotional, cognitive-problem solving, vestibular, visual, auditory. All systems need to have specific and carefully graded input in varying environments and situations in order to develop as fully as possible.

Early “tummy time”/prone play time is critical to help with:

- **Respiratory expansion** (for pressure on the upper trunk to help with rib mobility and for thoracic extension to prepare for rib mobility). This in turn leads to a mobile rib cage for the abdominal musculature to work off – leading to greater trunk stability.
- **Oral-motor desensitizing** to help with good suck/swallow/breathe pattern and to prepare the oral area for managing textures, tastes, and movement for speech/articulation
- **Upper quadrant function**, (shoulder complex) mobility, strength, and control by providing proprioceptive and kinesthetic information to the shoulder girdle components, building strength with a combination of lifting up (with spine extensors and scapular muscles), holding up (with shoulder girdle and arm muscles) and pushing up (with arm/shoulder/scapular muscles).
- **Strength, mobility, and control** of arm, forearm, and hand by providing input to forearm with lateral weight shifts to assist mobility and control of pronation / supination for orientation of hand and particularly thumb for beginning opposition activities within visual field and with forearm supported.
- **Depth perception**, orientation in space, preparation for protective reactions of arms (proprioceptive feedback/feed forward regarding distance from hand to face, amount of ‘strength’ needed for pushing and guarding head, and visual regard for hands in weight bearing postures for mobility / stability interaction).
- **Strength of spine and hip musculature** to support body weight and upright postures for the years to come. The hip muscles must be able to support the entire weight of the body in extended positions (standing and walking being the two most commonly perceived) for extended periods of time. In the prone position, the gluteal (hip) muscles are strengthened against gravity; in upright positions, the hip muscles work with gravity assist—thus not providing the same preparation for future function. Anti-gravity work of hip musculature assists in forming a ‘stable’ hip joint. Kicking in prone is another way to establish a stable hip joint.

As crucial as “tummy time” is, it’s also important to recognize the need for sleeping on the back as a prevention for Sudden Infant Death Syndrome (SIDS). Therefore it is critical that parents and caregivers understand the purpose of both positions. The adage is: *Back to sleep; front to play.*³

But we cannot wait until the baby “plays.” We must provide this very important piece of the neuro-developmental puzzle in the first hours and days of life! And we must impress on the caregivers the importance of tummy time in the development of babies *from the start.*

REFERENCES:

1. Personal notes from NDT/Bobath courses: Dr. and Mrs. Karel Bobath (1972); Mary Quinton (1978, 1982, 1983, 1986); other continuing education opportunities.
2. Notes from teachings and writings of Lois Bly: 1984-1990
3. Personal professional experience (1968-present)
4. Pathways Center for Children – parent brochure: 1996

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