



One *Small* Step  
Physical Therapy

## POSITIONAL PLAGIOCEPHALY

Take One *Small* Step to Support Your Baby's Growth and Development

### My Baby's Head is Flat!

#### **Why Did This Happen? What Can I Do to Help?**

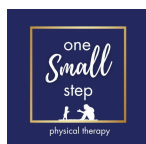
Parents who notice a flattening on the back of their infant's head will often struggle to answer these questions. The first step is to talk to your pediatrician. Plagiocephaly, or flat head syndrome, can sometimes lead to more challenging issues such as tightening of the neck muscles (torticollis), movement asymmetries or motor delays. Research has found that early intervention increases the positive results and reduces the rate of worsening positional plagiocephaly [1].

#### **What is Positional Plagiocephaly?**

Positional plagiocephaly is the posterior lateral flattening of one side of the head. This flattening may cause facial asymmetries, a bulging of the forehead and a forward shifting of the ear on the same side as the flat spot. Positional plagiocephaly most commonly occurs in the first 6 months after birth and is due to the resting position of the baby's head.

#### **Why Does This Happen?**

Infants skulls are soft and flexible to allow for delivery and to accommodate for rapid brain growth that occurs during the first year of life. In order to reduce the incidence of Sudden Unexpected Infant Death (SUID) it is recommended to always place babies on their backs to sleep [1]. Since babies sleep 11-17 hours per day, depending on their age, they spend a lot of time flat on their backs. Due to the developing strength in their neck and trunk muscles, along with possible environmental factors, babies could develop a preference to rest their head toward one direction. If a preference occurs, this area of their head would be in contact with the surface for longer periods of time. Since babies are growing rapidly during this period of development the part of the head in prolonged contact with the surface will flatten, while the other areas expand, causing a positional plagiocephaly. If a plagiocephaly is present, the baby will tend to rest their head on the flat spot, leading to a stronger tendency to rest in that position



## What Are Some of the Reasons for Positional Plagiocephaly?

**Prolonged Back-lying Position:** Lying on their backs for long periods of time, especially when a baby has a preference to look in one direction, contributes to a positional plagiocephaly.

**Limited Tummy Time:** Some babies have a hard time lifting their head when placed on their tummies. They might fuss or cry when in this position preventing parents and caregivers from putting their baby in supervised tummy time. A lack of supervised tummy time leads babies to spend longer periods of time on their backs [6].

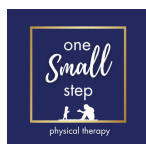
**Too Much Time Spent in Containers!!** In the first 6 months of life babies are working on strengthening the muscles in their neck and trunk. Containers such as car seats, swings, bouncers and other devices constrain movement and maintain babies in a position they might not be ready for. Since they lack the strength to correct their position they might tend to lean or look in one direction which can cause or worsen a positional plagiocephaly.

**Environmental Factors:** Babies learn to turn to sound and visual stimulation at an early age. If the baby's sleep or play area is situated so most of the stimulation comes from one direction, it might cause them to turn their head toward that direction more frequently.

**Limited Neck Mobility:** Some babies are born with or develop a lack of mobility of the neck due to tightness in one of the neck muscles, the sternocleidomastoid (SCM) muscle. This condition is referred to as torticollis. If your baby is unable to turn their neck to one side talk to your doctor and get a referral to physical therapy immediately. Studies have shown that early identification and treatment of torticollis lead to better outcomes. [4]

**Prematurity:** Premature babies often have softer skulls and can spend a long time in the neonatal intensive care unit (NICU). They might spend longer periods of time on their backs or in certain positions, due to medical reasons, putting them at a higher risk of positional plagiocephaly. [5]

**Multiple Births:** More babies means less room in utero and a higher risk of plagiocephaly due to intrauterine positioning and constraints [5].



## What Are Some Things I Can Do to Help?

**Tummy Time:** Lots of supervised tummy time.

**Limit Time in Containers:** Containers are any device that holds a baby in place and limits movement. Some examples include swings, bouncers, standers and car seats. Use these sparingly and aim for less than 30 minutes per day. Floor and mat play allow babies to explore their environment and help promote motor development.

**Modify the environment:** Make sure that your baby has visual and auditory stimulation on both sides of their body. If they rarely look to one side put more interesting items in the center of their visual field and to the side they neglect.

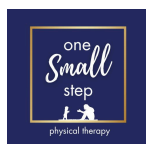
**Change the direction of their head in the crib:** Always put your baby on their back to sleep but you can change the side of the crib where their head is pointing. For example, one day put their head to the right end of the crib and the next day put it to the left end of the crib. This will encourage your baby to look both ways toward interesting stimulation. This is especially helpful if you have the crib against the wall.

**Avoid pillows or external positioners:** The American Association of Pediatrics discourages the use of positioning pillows in an infant's sleep environment. These products do not allow for a safe sleep environment. Visit [HealthChildrens.org/Safesleep](https://www.healthchildrens.org/safesleep) for more information on recommended safe sleep practices.

## What Are Some Treatment Options for Positional Plagiocephaly?

**Pediatric Physical Therapy:** A review done by the congress of Neurological Surgeons indicated that specialized pediatric physical therapy should be considered as the first-line intervention for positional plagiocephaly [2]. The use of manual therapy techniques in conjunction with caregiver education has been shown to produce the best results.

**Helmet therapy:** Helmets apply gentle, constant pressure to certain areas of the skull while allowing space for growth in the flattened areas, helping to reshape the head over time. Helmets might be considered for those severe cases where physical therapy and repositioning methods have been unsuccessful [3].



## References:

1. Blanco-Diaz M, Marcos-Alvarez M, Escobio-Prieto I, De la Fuente-Costa M, Perez-Dominguez B, Pinero-Pinto E, Rodriguez-Rodriguez AM. Effectiveness of Conservative Treatments in Positional Plagiocephaly in Infants: A Systematic Review. *Children (Basel)*. 2023 Jul 7;10(7):1184. doi: 10.3390/children10071184. PMID: 37508680; PMCID: PMC10378416. [[Google Scholar](#)]
2. Baird L.C., Klimo P., Jr., Flannery A.M., Bauer D.F., Beier A., Durham S., Lin A.Y., McClung-Smith C., Mitchell L., Nikas D., et al. Congress of Neurological Surgeons Systematic Review and Evidence-Based Guideline for the Management of Patients with Positional Plagiocephaly: The Role of Physical Therapy. *Neurosurgery*. 2016;79:E630–E631. doi: 10.1227/NEU.0000000000001429. [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
3. Kluba S., Kraut W., Reinert S., Krimmel M. What is the optimal time to start helmet therapy in positional plagiocephaly? *Plast. Reconstr. Surg*. 2011;128:492–498. doi: 10.1097/PRS.0b013e31821b62d6. [[PubMed](#)] [[CrossRef](#)] [[Google Scholar](#)]
4. Nichter S. A Clinical Algorithm for Early Identification and Intervention of Cervical Muscular Torticollis. *Clin Pediatr (Phila)*. 2016 Jun;55(6):532-6. doi: 10.1177/0009922815600396. Epub 2015 Aug 24. PMID: 26307184.
5. Littlefield, Timothy R., et al. "Multiple-birth infants at higher risk for development of deformational plagiocephaly." *Pediatrics* 103.3 (1999): 565-569.
6. Van Vlimmeren, Leo A., et al. "Risk factors for deformational plagiocephaly at birth and at 7 weeks of age: a prospective cohort study." *Pediatrics* 119.2 (2007): e408-e418.

One *Small* Step  
Physical Therapy

Serving San Francisco, CA

**Jeanine Donohue, MSPT, NTMTC**

**Phone/Message:** 415-725-2494

**Email:** [onesmallstepphysicaltherapy.com](mailto:onesmallstepphysicaltherapy.com)

**Website:** [onesmallsteppt.com](http://onesmallsteppt.com)

