

Three Foundational Studies Advance the Understanding of CRO Treatment of Deformational Head Shapes

Background: Cranial Technologies is committed to the ongoing scientific discovery and evidence-based clinical care for infants with head shape deformities. With 39 published research articles and counting, Cranial Technologies has published more research than any other institution in the world in this area. Notably, we recently published three foundational studies that examine each of the deformational head shape types: plagiocephaly, brachycephaly, and a combination of both. These investigations have helped improve the understanding of factors that affect treatment outcomes. Collectively, these studies reviewed the outcomes of more than 114,000 infants treated with cranial remodeling orthoses (CROs), making this the largest collection of published evidence in the field.

Findings	Isolated Brachycephaly Study	Isolated Plagiocephaly Study	Combinational Head Shape Study
Sample Size	4205 infants with brachycephaly	27,990 infants with plagiocephaly	82,326 infants with cDPB/cDBP
Overall Efficacy of DOC band®	Significant improvement	Significant improvement	Significant improvement
Treatment Timing	Earlier= better outcome & shorter treatment	Earlier= better outcome & shorter treatment	Earlier= better outcome & shorter treatment*
Mean improvement	81.4% improvement toward normal (CI 95.0 to 89.4)**	CVAI: -3.4 (8.3 to 4.9)**	CVAI: -3.6 (7.5 to 3.9) CI: -3.8 (94.2 to 90.4)**
Factors Associated w/ Better Outcome	Younger age, smaller initial severity, absence of torticollis	Younger age, smaller initial severity, left-sided assym., absence of torticollis	Younger age, smaller initial severity, left-sided assym., absence of torticollis

*In the combinational head shape study, CI did not exhibit the same relationship with entry age as CVAI. This is likely because the adjustment approach for combinational head shapes prioritizes asymmetry correction first, before correcting proportionality.

**Adherence is an important determinant of treatment outcomes. These studies assumed parents adhered to the recommended 23hr/day wear protocol, although actual wear times likely varied. Future studies will objectively measure adherence with a sensor to better assess its impact on outcomes.



Snapshot:

- Cranial Technologies has published three foundational, peer-reviewed studies examining deformational brachycephaly (DB), deformational plagiocephaly (DP), and combinational head shapes (cDPB).
- These studies examined CRO treatment outcomes and identified the primary factors that impact treatment success.
- Together, these three studies make up the largest collection of published evidence in the field of deformational head shapes. All three studies are open access.

Study #1

Kelly et al. (2018) Helmet Treatment of Infants with Deformational Brachycephaly. *Global Pediatr Health*. 5:2333794X18805618

This was a retrospective study of 4250 infants with isolated deformational brachycephaly treated with a cranial orthosis from 2013 to 2017.

Study #2

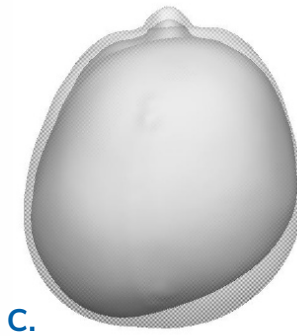
Trebilcock et al. (2025) A 10-Year Review of the Efficacy of CRO Treatment [...] for Infants with Isolated Deformational Plagiocephaly. *Children*. 12(8):1099

This is the largest retrospective study of infants with isolated deformational plagiocephaly to date. This study examined the treatment outcomes of 27,990 infants with isolated deformational plagiocephaly and identified the key predictors of treatment success.

Study #3

Findley et al. (2026) A Review of CRO Treatment for Babies with Combinational Deformational Plagiocephaly and Development of a New Classification Scale. *Children*. 13(5):625

This is the first study to investigate combinational plagiocephaly-brachycephaly (cDPB or cDBP) and the outcomes of 82,326 infants.



Before & After CRO Treatment

- A: Isolated brachycephaly (DB)
- B: Isolated plagiocephaly (DP)
- C: Combinational (cDPB)



Cranial Technologies is passionate about strengthening the evidence base on deformational head shapes through large-scale clinical studies and ongoing innovation.

We have been actively involved in clinical research for over three decades, collaborating with dozens of world-class institutions.

If your team is interested in collaborating on research, please reach out to your local clinical sales representative.