

What are the effects of palatal plate therapy on orofacial features and speech in children with Down syndrome?

Lauren Chad

M.Cl.Sc SLP Candidate

University of Western Ontario: School of Communication Sciences and Disorders

This critical review examines the orofacial and speech effects of palatal plate therapy on children with Down syndrome. Multiple studies, varying in style design, have investigated this topic. Features analyzed in these studies include tongue protrusion, mouth occlusion, tooth eruption, sucking habits, articulation and facial expression. Overall, there is suggestive evidence that palatal plate therapy can improve tongue protrusion and mouth occlusion, and facial expression and equivocal evidence that palatal plate therapy will improve articulation in children with Down syndrome.

Children with Down syndrome have common orofacial features consisting of orofacial hypotonicity, a protruding tongue, and an open mouth posture. Complications

, 2003), in Munich, Germany in 1978 (Korbmacher, Limbrock, Khal-Neike, 2002). Palatal plate therapy as described by Castillo-Morales consists of two components, the insertion of a palatal plate device and orofacial therapy provided typically by a physiotherapist



( $p < 0.001$ ). Additionally, parents reported progress in eating and drinking behaviors and a reduction of drooling.

Strengths: The participants were randomized into

assessment as well as a parent questionnaire. The results indicated significant differences for visible tongue during speech ( $p < 0.01$ ) and non-speech periods ( $p < 0.05$ ), lip rounding during spontaneous speech ( $p < 0.01$ ), and reduction in open mouth ( $p < 0.05$ ). Facial expression was significantly better for treatment group ( $p < 0.05$ ). Nocturnal snoring was documented to be significantly less ( $p < 0.05$ ) in the treatment group according to the parental questionnaire. Lip rounding and visible tongue were correlated for the treatment group ( $r_s = 0.58$   $p < 0.01$ ). No statistically significant values for communicative preference and articulation were found.

Strengths: Similar strengths observed in Carlstedt et al. (2001) in terms of methods and participants were observed as in Carlstedt et al. (2003). Additionally,  
p

(7/24). Furthermore, evaluations were based on short video recording (300 seconds), which may not be representative of the child's features. Additionally, children in the treatment group received inconsistent care; 5/24 children also received physiotherapy, and treatment times from 4-11 months. Moreover, the study was lacking a control group of children

Korbmacher et al. (2006) assessed three time periods: T; pre treatment, R1: end of therapy, R2; follow up exam 13 years post treatment. To evaluate the effects of treatment a

a larger improvement

---

Few studies reported significant findings for improvements in speech and language. Most authors reported descriptive results, with a positive trend in improvements of articulation, speech and facial expression in children with Down syndrome who participate in palatal plate therapy. This evidence is mostly equivocal or suggestive and must be interpreted with considerable caution.

#### Articulation

Several studies that analyzed short-term effects revealed improvements in speech as a result of palatal plate therapy. Backman et al. (2003) documented a positive trend for those who participated in palatal plate therapy and improvements in pre requisites for speech. Backman et al. (2006) obtained qualitative results for



Bäckman, B., Grevér-Sjölander, A. C., Holm, A. K., & Johansson, I. (2003). Children with Down syndrome: oral development and morphology after use of palatal plates between 6 and 18 months of age. *International Journal of Paediatric Dentistry*, 13(5), 327-335.

Bäckman, B., Grevér-Sjölander, A.C., Bengtsson, K., Persson, J. & Johansson, I (2006). "Children with Down syndrome: oral development and