

Abstract

Cranial bands are used to correct cranial deformities in infants. The most common cranial deformities are plagiocephaly and brachycephaly. The typical treatment time of cranial bands are between 6 and 12 months, if the treatment starts earlier, it will be a shorter treatment time. During this time the patient grows and needs a new helmet after about 6 months, however only the first band is covered by insurance. The solution to this problem is to create an adjustable cranial band mechanism that can be used to modify a custom helmet. The design that is proposed is one that consists of four quadrants threaded together using a BOA™ system. The helmet will be formed by an orthotist, cut into 4 quadrants, and then threaded together. This allows the cranial to be the exact shape needed to correct the cranial deformity and only expands and contracts circumferentially. This allows the caregiver to place and remove the helmet using the ratcheting system. A prototype was built and underwent testing to see the integrity and feasibility of the design.

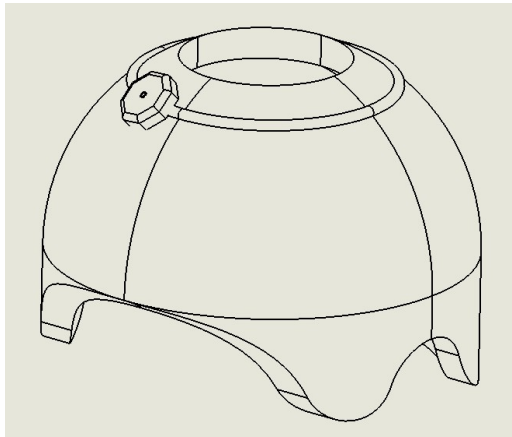


Figure 1: CAD drawing of design



Figure 2: Final Prototype



Figure 3: Team photo from left to right, Hannah Newkirk, Kirsten Stuck, Caitlin Bingham, Skylar Russell, Noah Dennis