



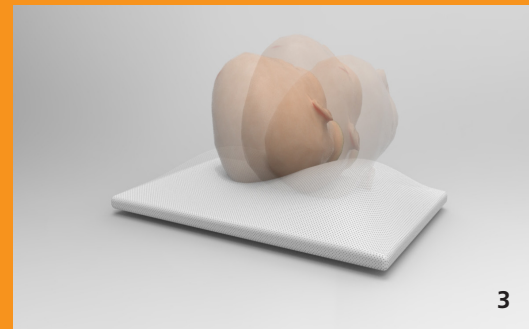
FRAUNHOFER ADAPTRONICS ALLIANCE



1



2



3

- 1 structural construction graphically
- 2 active storage cushion - Cumulino
- 3 functionalities schematically

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CUMULINO - ACTIVE STORAGE CUSHION WITH SHAPE MEMORY ALLOY

Cumulino is an active positioning cushion to cure and prevent infancy skull asymmetries.

Motivation

Since supine sleeping position is recommended for infants it gets more likely to skull deformations. These deformities can be caused by positional anomalies in utero or postnatally. For example 19.7% of newborns in the fourth month are affected. These deformations are not only an obvious aesthetic problem that persists into adulthood, but also go with orthodontic problems, eye changes (exotropia - external strabismus) and delays in cognitive development.

Additionally a reduced blood flow to the brain and an accompanying potential risk of sudden infant death syndrome (SIDS) cannot be excluded.

Existing products do not solve the problem

to the same degree. Previous pillows do not consider the sudden infant death syndrome-problem.

Functionality

While the infant lies on the pillow, a head moving from left to right and vice versa is achieved. This is achieved by a continuous but very slow change in shape.

Without disturbing the sleep different spots of the child's head can be addressed and prevent a unilateral pressure of the skull.

This is made possible by shape memory alloy actuators, embedded in a flexible plastic matrix inside the cushion.

A variety of usage scenarios and treatment rooms are provided by functions like sensors and the battery operation.



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