

Bottle Feeding of Low Facial Muscle Tone Infants

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Problem Statement:

- ▶ Under developed babies need mothers to use the index and thumb finger to hold their lips together to create the suction needed to drink from a baby bottle
- ▶ With both hands occupied during feeding, mothers have had to resort to balancing the bottle on the feeding hand
- ▶ Need device to hold bottle to feeding hand

Design Criteria:

- ❖ Allows mother to stabilize bottle for feeding
- ❖ Adjustable for angle of bottle/size of bottle/size of wrist and hand
- ❖ Comfortable
- ❖ Easily manufactured

Foam-Velcro Prototype

Design Concept: Use Velcro to attach bottle to hand. The foam pieces offer stability (pink foam) and change in angle of bottle (yellow foam).



Composed of three parts:

1. Bike Glove with Velcro superglued to the thumb-index finger area of the glove.
2. Foam Wedge with Velcro superglued to inclined edge and bottom surface.
3. Modification of the Tipetoes design (tipetoes.com) to hold bottle. Velcro is attached to bottom and top surface to latch onto the foam block and then the bottle, respectively.

Bottle modification: tape a Velcro piece along the bottle (length wise)

Velcro with C-bracket Prototype

Design Concept: Use Velcro to attach C-bracket to hand. The C-bracket holds the bottle in place, and the Velcro attached to the hand provides stability and some range of motion.



Composed of three parts:

1. Bike Glove with Velcro superglued to the thumb-index finger area of the glove.
2. C-bracket with Velcro attaches to the glove's Velcro.
3. Bottle fits snugly into the C-bracket.

Bottle Modification: none

Foam with Velcro Strap Prototype

Design Concept: Use Tipetopes foam and Velcro strap to hold foam piece to wrist.



Composed of two parts:

1. Foam Tipetoes with slots cut for Velcro strap.
2. Off-the-shelf Velcro strap.

Bottle modification: none

Hand Cuff with Pivot-Head Prototype

Design Concept: Utilize standard hand cuff, pivot joint, and C-bracket to hold the bottle securely while providing adjustable positioning of the bottle.



Composed of four parts:

1. Hand cuff with single hole drilled and threaded to accept male-end pivot joint.
2. Male-end pivot joint (orange).
3. Female-end pivot joint (blue).
4. C-Bracket drilled and bolted to female-end pivot joint.

Bottle modification: none

Pistol Grip with Pivot-Head Prototype

Design Concept: Incorporate a custom grip for digits 3, 4, and 5, a pivot joint, and C-bracket to utilize the grip strength of the entire hand while holding the bottle securely and providing adjustable positioning of the bottle.



Composed of four parts:

1. Custom grip made from aluminum shaft, drilled and threaded to accept male-end pivot joint, and rubber coated.
2. Male-end pivot joint (orange).
3. Female-end pivot joint (blue).
4. C-Bracket drilled and bolted to female-end pivot joint.

Bottle modification: none