

The Adapted ExerSaucer



Problem Statement/Background:

The Adapted ExerSaucer was created for a three-year-old client who has several medical considerations, which prevent him from engaging in typical activities for a child of his age. When we met him, it was noted that he was unable to sit up or hold his head up independently, was completely nonverbal, and maneuvered around the room by rolling or using his legs to move around on his back. On no more than three occasions, he was able to roll onto his stomach and prop himself up on his forearms, however, he was unable to hold the position for more than ten seconds. He was not actively engaging with any toys while we were observing him although he did engage with several members of the design team throughout the initial visit. Additionally, we learned that he had begun to engage in self-injurious behavior. Possible causes include wanting to communicate, attention-seeking, or boredom. Based on all his behaviors throughout our home visit, it was clear he wanted to engage in more meaningful ways, however, he was unable to communicate his needs. Our client's mother was excited to have the design team

interacting with her son and discussing possible adaptations or product options for him, however, she was unsure what would be the best option with which to start. This allowed the design team the freedom to decide what would be possibilities for the client, then move forward with development when the best idea was identified.

Methods/Approach/Solutions Considered:

Following the first meeting with our client and his mom, the design team obtained a copy of his occupational therapy evaluation. From that, we learned that he had been diagnosed with cerebral palsy (CP), cortical visual impairment (CVI), developmental delay, and chronic lung disease. Our client's physical abilities, although limiting in overall functional capacity, did enable him to propel himself around his environment by using his legs to push and maneuver himself around the floor on his back. He was also able to utilize cause and effect switches to power toys as evidenced by a switch-activated car he had learned how to use. Challenges we encountered while considering how to modify the ExerSaucer included the client's limited head, neck, and upper extremity control, and the client's low tolerance for frustration. Because of our client's limited abilities, his environment consisted of the living room of his home with very limited interactions with the outside world. He spent most of his days on the floor of the living room rolling around as he pleased or strapped into his carseat. He was given toys with which to play by his mother, however, his favorite activity seemed to be driving his toy car around the living room. Unfortunately, he was unable to drive the car completely independently because he could not turn it on his own or get into it without his mother's assistance. Some of his mother's ideas for the design team included a communication device, modifying his current toy car for

easier access, or an activity which would place him in an upright or seated position. Because our client's mother had several different lines of thought for us to consider, we were able to explore various possibilities before we decided on modifying an off-the-shelf ExerSaucer. This would allow him to play with more toys, remain in an upright position while playing, and enable him to practice autonomy in play. However, after looking at current models of ExerSaucers, it became apparent that the design team would have to add a backrest which would support his torso and head as well as lateral supports for extra support of his head.

Description of Final Approach and Design:

The initial prototype of the Adapted ExerSaucer stemmed from the idea of creating a backrest that could attach and detach from our client's existing ExerSaucer. The extended backrest and strapping system would support him during upright play and ensure his continued safety. Tailorsplint, a type of thermoplastic material typically used for constructing orthoses, was the material chosen since it is highly malleable and would provide the client with the necessary physical support. Initially, only a backrest was fabricated, however, due to the instability of the initial model when it was fitted to the ExerSaucer, an additional piece was fabricated to fit under the seat of the ExerSaucer to add stability and support.

Once the backrest was constructed, strapping materials and padding were added. Because of the client's low core and neck strength, a strapping system similar to that of a car seat was fabricated using commercially available straps and buckles. The straps were fastened in the back with clips to prevent the client from loosening the straps and were the same colors as the fabric which covered the backrest. The extended backrest was first covered with a thin mesh fabric and

then a thicker, fleece fabric to ensure the client was comfortable in his seat. The fabric that was chosen was orange with green crocodiles on it to create a contrasting visual environment and enable our client to see it better as well as be appealing to a three-year-old boy.

Outcome:

The Adapted ExerSaucer was very successful as it allowed the user to be in an upright position while playing and encouraged him to begin to weight bear through his feet and legs. Although our client is not able to communicate verbally, he engaged with the product while he was in it and did not show signs of frustration. His mother was very excited that we were able to design a product that allowed him to be active and engaged while also remaining safe. Our client was particularly interested in the small, multi-colored piano which played music and lit up when the keys were pressed. Additionally, he located one of the joints of the ExerSaucer very quickly and proceeded to use it as a food rest throughout the rest of the time he was in the Adapted Exersaucer.

Cost:

Supplies	Quantity	Cost <i>(Include retail price for all materials. Indicate whether materials were donated or need to be purchased)</i>	Vendor <i>(Provide a link to the product/material via a vendor site)</i>
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Buckle	2	2.99 x 2	http://www.hobbylobby.com/Fabric-Sewing/Sewing-Quilting-Notions/Fasteners/1-Black-Parachute-Buckle/p/51217
Buckle Adjusters	2	1.49 x 2	http://www.hobbylobby.com/Fabric-Sewing/Sewing-Quilting-Notions/Fasteners/Black-Strap-Adjusters/p/51219
ExerSaucer	1	39.99	https://www.target.com/p/evenflo-174-exersaucer-bounce-learn-activity-center/-/A-14419213
Cotton Batting	1	11.99	http://www.hobbylobby.com/Fabric-Sewing/Batting-Fillings-Forms/Batting/Crib-Size-Needled-Cotton-Batting/p/36435
Thermoplastic Material	1	25.00	Provided by the occupational therapy department.
Total:	7	85.94	

Significance:

The significance of creating the Adapted ExerSaucer is far-reaching for many families who have children with physical or cognitive disabilities that prevent them from engaging in typical, age-appropriate play activities. The extended backrest allows for children that have low tone in their core and/or neck to be supported while they are playing. This permits the child's brain to concentrate on playing rather than staying upright. Further, the adaptations made to the ExerSaucer could be implemented in other types of toys to provide collateral support to a child so they can engage in meaningful occupations such as play or eating. The harness straps that were added to the ExerSaucer allow for additional support that will not only keep our client in an

upright position, but will also keep him safe while he is playing. Finally, the adaptations our design team made could be replicated for a minimal price which may inspire someone else to create an adapted toy for their child and continue to spread the idea of universal design of toys.

Acknowledgements/References:

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