

Design Considerations

Our Client: The Chartwell Center

The Chartwell Center in New Orleans, LA specializes in the education of children with autism and related disorders.

- Upper-elementary classroom (ages 8-12)
- Students with wide range of independence
- Limited Staff
- Classroom sectioned into stations

Characteristics of Children with Autism

- Sameness
- Restricted Behavior
- Unusual response to sensory stimuli

Specific Design Goals

- Minimize noise
- Establish feeling of Security
- Provide rewards for correct use
- Use design elements students are familiar with
- Establish used confidence and independence
- Avoid negative sensory reaction
- Provide Teacher feedback

Acknowledgements

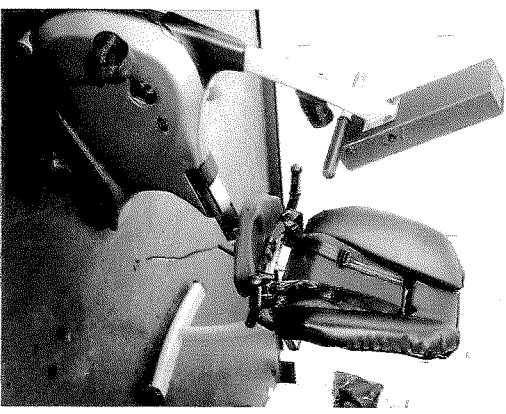
Our team would like to thank our advisor, Dr. David Rice, Biomedical Engineering Department staff John Sullivan, and Lorraine McGinley, our faculty panel members Dr. Cedric Walker, and Dr. Michael Dancisak. We would also like to thank the National Science Foundation for funding this project.



Tulane University
New Orleans, LA



Exercise Incentive Device for Children with Autism



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Marketability

Childhood Obesity is a growing problem...

According to the National Health and Nutrition Survey 1/3 of Children are obese or at risk of becoming obese. Fun physical activity promotes a healthy lifestyle.

Although our exercise bike was designed for children with autism it could be easily used in all elementary classrooms.

Our modification kit provides a cost effective way to update old equipment and can serve as an alternative to replacement.

Modification Kit - \$300

New Exercise Bike - \$1000



Modification Kit with incentive console, seat modifications, and restraint

Incentive Console

Visual Feedback

Visual feedback is provided through a series of colored lights featured on an incentive mechanism currently used in the classroom.

Red - Session Over
Yellow - Too Slow, Too Fast
Green - Keep Going, Good Job



The familiarity with this lighting system will enable students to understand operation of the bicycle from their first use. The traffic light design also makes the bike fun to use.

Auditory Feedback

As a reward for correct use, music will play through headphones attached to the seat back. Coordination with the lighting feedback will reinforce correct use.

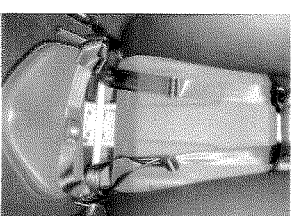
When the light is green, indicating correct use, music will play. If pedaling stops or the set time is reached music will stop.

The console will accept a variety of music players through a headphone jack.

Safety Features

Restraint

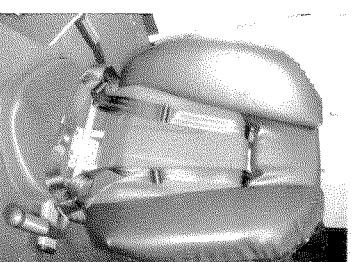
The lap belt is operated with a simple push button, which is familiar to students.



An optional harness provides additional restraint to students who require it.

Seat Modifications

The original seat was modified to provide extra stability and comfort to the user.



The seat modification is upholstered with durable marine quality vinyl covered by a soft, removable, washable cover.