Travel Computer Mount & Assistive Jumping Device

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Sponsored by:
NSF

Client Contact:
Brenda Stenglein
Ashford, CT
Travel Computer Mount Overview

1 Introduction
   a. Background
   b. Purpose
2 Objective
3 Previous Works
4 Final Design
5 Components
6 Budget
7 Conclusion
There are many disabilities which can impair an individual's communication skills.

One such disability is cerebral palsy.

Assistive communicative devices such as the Dynavox Vmax allow these individuals to effectively communicate.

While these devices work extremely well, there is a need for a travel mount that will allow for effective operation in motor vehicles.
Purpose

To design and build a mount for the Dynavox Vmax which will allow for its full usage while in a motor vehicle.
Objective

The Device Will:
- Support the Dynavox Vmax
- Allow users and passengers to view and access Vmax easily
- Allow for easy re/detachment of the Vmax
- Allow for installation in variety of car models
- Have adjustable height
- Withstand vehicle vibrations
- Not compromise safety of passengers
Previous Works

Figure 1: NSF Project Communication Device Mount

Figure 2: NSF Project Dynavox Mounting System for Horseback Riding

Figure 3: Chevrolet Astro Jotto Desk Mount
Final Design

Figure 4. Travel Computer Mount
Folding Quick Release Base

Figure 5: Daessy Folding Base
Elbow Joints

Figure 6: Daessy Elbow Joint
Mount Attachment Plates

Figure 7: Mount Attachment Plates
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Conclusions

Assistive communication devices have helped many people with disabilities.

However without a travel mount for these devices, communicating for these people becomes extremely limited.

The travel computer mount will help the client and others communicate while on the go.
Assistive Jumping Device Overview

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Background

Advances in the medical field have improved the lives of people with disabilities. Despite these advances, there is no assistive jumping device that will allow the severely disabled to jump on a trampoline. The benefits of jumping on a trampoline include: muscle conditioning, improved balance and coordination, and increased self-confidence.
The Assistive Jumping Device (AJD) will allow people with cerebral palsy and similar conditions to independently jump on a trampoline.
Objective

*The Assistive Jumping Device must accomplish the following:*

- Maintain support of the torso and upper extremities of the user while allowing full motion of the legs to jump.
- Maintain stability of the user while jumping in the device and to withstand the repetitive motion and usage.
- Framework must be sturdy and withstand the forces of usage.
- Withstand the outdoor elements (rain, snow, wind, lightning, etc.).
- Provide for the safety of the user as well as for other people on trampoline not using the device.
- Consider the growth of the user in future usage.
Constraints

Cost
- NSF Funded
- Must be maintained by family

Safety
- User’s control and stability
- Other’s in the vicinity

On-Site building
- Large size
- Outdoor elements
Previous Works

Figure 8: Adjustable Trampoline Support  
Patent 5788606

Figure 9: NSF Project Dancer Assistant
Final Design

Figure 10: Assistive Jumping Device
Jib Crane and Trolley

Figure 11: Jib Crane

Figure 12: Trolley for upper beam.
Crank – Pulley System

Figure 13: (above) Crank – pulley system

Figure 14: (right) Crank
Vertical Rail

Figure 15: Vertical rail system
Harness

Figure 16: Supportive harness  Figure 17: Climbing harness
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Conclusion

- Exercise options are limited for those with disabilities
- There is no device to properly support disabled jumpers
- It is essential to address this problem
- All should be able to enjoy the joys of trampoline jumping
Acknowledgments

- Dr. John Enderle
- David Price
- NSF
- The Stenglein Family
- Dr. Donald Peterson
Questions?