Go Baby Go :Empowering Young Children with Disabilities Through Independent Mobility

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ABSTRACT

- Self-initiated mobility is important for a child's overall development and that very young children are in a critical period for developing brain plasticity and learning.
- The "GO BABY GO" program provides modified, ride-on cars to young children with disabilities, enabling independent mobility and exploration.
- Independent mobility is linked to cognitive, social, motor, language, and overall developmental benefits in early childhood.
- Traditional mobility aids like strollers or being carried lack the active control and exploration benefits of independent movement.

Key Benefits:

- Cognitive development
- Social skills & peer interaction
- Improved motor skills
- Language development
- Sense of independence at an early age

"The look of pure joy on my daughter's face when she can 'go' on her own is priceless." - Sarah M., GO BABY GO parent

OBJECTIVES

- Provide a means for independent mobility and exploration for young children with disabilities.
- Facilitate cognitive, social, motor, language, and overall developmental gains through active self-propelled movement.
- Promote inclusion and socialization with peers by enabling children to move independently and engage in play activities.
- Offer a cost-effective alternative to expensive power wheelchairs, which are typically not available until later ages.

Happy Little Driver from 2023

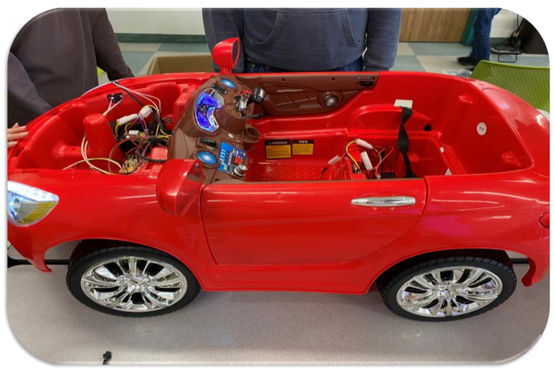
- Lucia Castillo - Peer Mentor (Automotive Engineer)
- May Yadanar Thein - Intern (Computer Science)
- Elina Durgaryan - Intern (Civil Engineer)
- Joshua Williams - Intern (Digital Character Design)
- Allen Gabriel Reyes - Intern (Nursing)
- Analuisa Alvarez - Intern (Psychology)

MODIFICATION PROCESS

- Modification process of ride-on toy cars:
- Installation of easy-to-use electric switches for operation
- Addition of seating support and padding for comfort and safety
- Other customizations based on individual needs
- Cost-effective approach: Approximately $100 for the ride-on car and $100 for modifications, totaling around $200 per modified vehicle.

- Steering and acceleration is rewired to an accessible button.
- A “kill switch” on the rear of the vehicle is added so that parents can quickly stop the car at any time.

AFTER MODIFICATION



BEFORE MODIFICATION

IMPACT & RESULTS

Past research shows children with access to independent mobility score 25% higher on cognitive tests and exhibit improved psychosocial skills compared to those without. Qualitative feedback from parents highlights the joy and confidence GO BABY GO cars give their children.

	Treatment group (n = 15)	Control group (n = 14)	t	p
Mean age-month (SD)	18.53 (7.69)	18.14 (7.33)	0.14	0.89
Diagnosis, n (%)				0.32
Developmental delay	11 (74%)	9 (65%)		
Cerebral palsy	2 (13%)	2 (14%)		
Others	2 (13%)	3 (21%)		
Gender, n				0.56
Male	7 (47%)	5 (36%)		
Female	8 (53%)	9 (64%)		
Regular treatment time in minutes per week (SD)	104 (66.95)	121.25 (78.32)	−0.64	0.53
Ride-on car or home training time in minutes per week (SD)	240 (0)	200.33 (123.73)	0.75	0.07

TABLE 1. Demographic data.

	Pretest, mean (SD) (95% CI)	Posttest, mean (SD) (95% CI)	Follow-up, mean (SD) (95% CI)	Group effect, p value (partial η^2)	Testing session effect, p value (partial η^2)	Interaction effect, p value (partial η^2)
PEDI_Mobility		p = 0.48 (0.019)			p < 0.01 (0.414)	p = 0.58 (0.020)
Treatment (n = 15)	16.64 (10.99) (10.55, 22.73)	24.33 (11.49) (17.97, 30.69)	27.31 (13.99) (19.57, 35.06)			
Control (n = 14)	15.40 (10.48) (9.35, 21.45)	19.85 (12.08) (12.87, 26.83)	23.92 (14.22) (15.71, 32.13)			
PEDI_Social Function		p = 0.74 (0.004)			p < 0.01 (0.422)	p = 0.03 (0.123)
Treatment (n = 15)	19.35 (13.89) (11.66, 27.05)	31.21 (11.45) (24.87, 37.55)	31.81 (14.16) (23.97, 39.65)			
Control (n = 14)	22.73 (13.24) (15.08, 30.38)	26.34 (14.41) (18.02, 34.66)	28.71 (14.08) (20.58, 36.85)			
PSI_Total Scores				p = 0.11 (0.091)	p = 0.32 (0.042)	p < 0.01 (0.211)
Treatment (n = 15)	101.40 (21.13) (89.70, 113.10)	88.93 (22.50) (76.47, 101.39)	91.87 (19.17) (81.25, 102.48)			
Control (n = 14)	102.71 (18.85) (91.83, 113.60)	107.79 (22.28) (94.93, 120.64)	107.43 (21.68) (94.91, 119.95)			

PEDI, Pediatric Evaluation of Disability Inventory; PSI, Parenting Stress Index.

TABLE 2. Comparisons on mobility, social function, and parenting stress levels between the two groups.

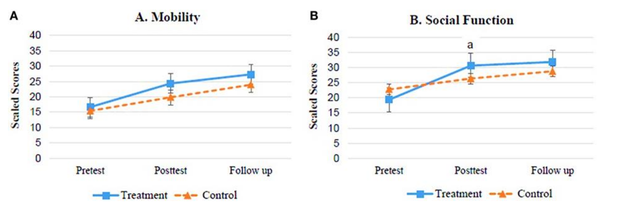
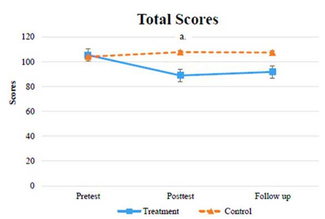


FIGURE 2. Mean ± SEM scaled scores of PEDI for both groups. (A) Mobility. (B) Social function. [a]Difference is significant (p < 0.05) between two groups.



	Pretest, mean (SD) (95% CI)	Posttest, mean (SD) (95% CI)
Treatment (n = 15)	22.54 (7.83) (18.20, 26.88)	62.11 (10.39)[a,b] (56.35, 67.86)
Control (n = 14)	21.80 (1.68) (20.79, 22.82)	43.99 (13.93)[b] (35.57, 52.40)

[a]Difference is significant (p < 0.05) between two groups.
[b]Difference is significant (p < 0.05) within the group.

TABLE 3. Comparisons on Goal Attainment Scaling (GAS) between the two groups.

FIGURE 3. Mean ± SEM total scores of PSI for both groups. [a]Difference is significant (p < 0.05) between two groups.

CASE STUDY

- **Study by Huang et al. (Chang Gung University, Taiwan)**
- Prospective, non-randomized controlled trial with 29 children aged 1-3 years with motor disabilities
- Treatment group (n=15) received 9 weeks of ride-on car training (2 hours, twice weekly) combined with an adult-directed social interaction program in a hospital setting
- Control group (n=14) received a 9-week home education program focused on mobility and social skills (mean 200 mins/week)
- Outcome measures: Pediatric Evaluation of Disability Inventory (PEDI) for mobility and social function, Parenting Stress Index (PSI), Goal Attainment Scaling (GAS)
- **Key Findings:**
- Both groups improved in mobility and social function post-intervention
- Ride-on car group showed significantly greater improvements in social function, lower parenting stress, and higher GAS scores than control group
- Mobility gains not maintained at 9-week follow-up in ride-on car group
- Conclusion: Combining modified ride-on car use with structured social training in a clinical setting can enhance social development, parenting efficacy, and goal achievement in young children with motor disabilities.

CONCLUSIONS

- The **"GO BABY GO"** program addresses a crucial need by providing independent mobility to young children with disabilities.
- Modified ride-on cars offer a cost-effective and accessible solution for promoting early childhood development.
- Independent mobility and exploration through the modified cars have demonstrated positive impacts on various developmental domains.
- The program facilitates inclusion, socialization, and overall quality of life for participating children and their families.

REFERENCES

Modified Ride-On Cars and Young Children with Disabilities: Effects of Combining Mobility and Social Training by **Huang et al. (Chang Gung University, Taiwan).**

CONTACTS

Go Baby Go was founded by Professor Cole Galloway as part of a research project at the University of Delaware but researchers have now trained volunteers in more than 40 communities nationally and internationally with satellite sites all over the world to expand availability.

Get Involved: Volunteer your time, make a donation, or learn more about bringing GO BABY GO to your community.

www.yourcpf.org

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