

Examining the Influence of Social Behavior on Motor Skills During Physical Activity in Children with Physical Disabilities

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Background

Children with physical disabilities typically participate in physical activities that are aligned with their function. As a result, children with physical disabilities engage in solitary activities more often, leaving little room to practice age appropriate social behaviors during physical activity with peers¹. Emerging literature supports the prescription of participation-based physical therapy for children with physical disabilities to achieve certain goals, such as improving motor skills². This is a more psychological approach to physical therapy to increase function, as enjoyable participation proves to increase motivation, social skills and self-efficacy³.

Communication and physical ability serve as significant determinants of physical activity participation for children with disabilities¹. Motor skill proficiency is strongly correlated with a child's physical activity (PA) level and children with physical disabilities are less physically active compared to typically developing children⁴. Participation-based therapy assumes that physical therapists support social environments to achieve a child's personal goals. However, relations between social behaviors and motor skills during physical activities have been underexplored. We need to understand the mechanism behind social influence in order to further guide and support physical therapy's participation-based treatment

Purpose

The purpose of this investigation is to examine the relationship between social behavior and motor skills performance during PA in children with physical disabilities, in order to further guide and support participation-based therapy methods.

Hypothesis

I hypothesize that social behaviors will have a positive correlation with motor skill performance during a structured physical activity setting.

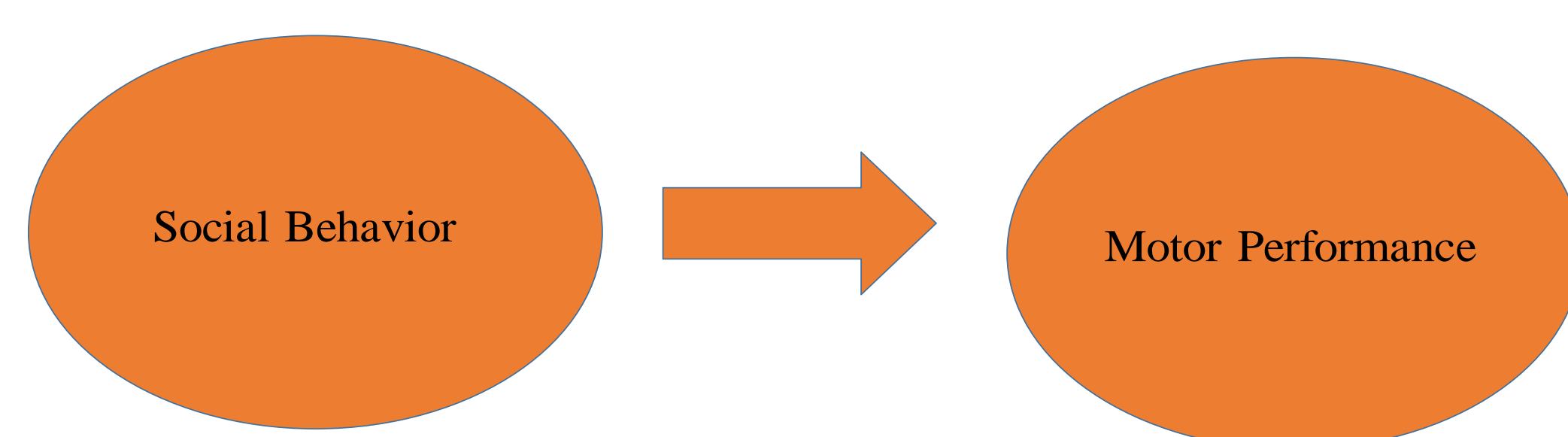


Figure 1: Observed Relationship

Methods

- **Design:** Observational/Cross Sectional.
- **Participants:** 10 children with disabilities ages 5 to 18 years of age were directly observed during a structured, 10 minute motor-skill based physical activity opportunity during their weekly adapted physical activity program, IMPACT*.
- **Procedure:** Participants were videotaped and later, and scored on the frequency that the child engaged in social interaction with peers and the number of times the child attempted a motor skill.

Motor Skills Observed

- Running
- Jumping
- Kicking
- Catching
- Throwing

***IMPACT:** "Individualized Movement and Physical Activity for Children Today" is an adaptive fitness program for children with disabilities. Each child has an assigned student volunteer who assists them through the activities in order to ensure safety and achieve attainable individualized goals.

Motor Skill Activity: These children engaged in a motor activity in a circuit setting consisted of 5 stations. Each station focused on 1 of 5 motor skills; running, jumping, kicking, throwing and catching. The goal of this activity is for each child to attempt a motor skill about 3 to 5 times at each station before the music cued them to rotate.

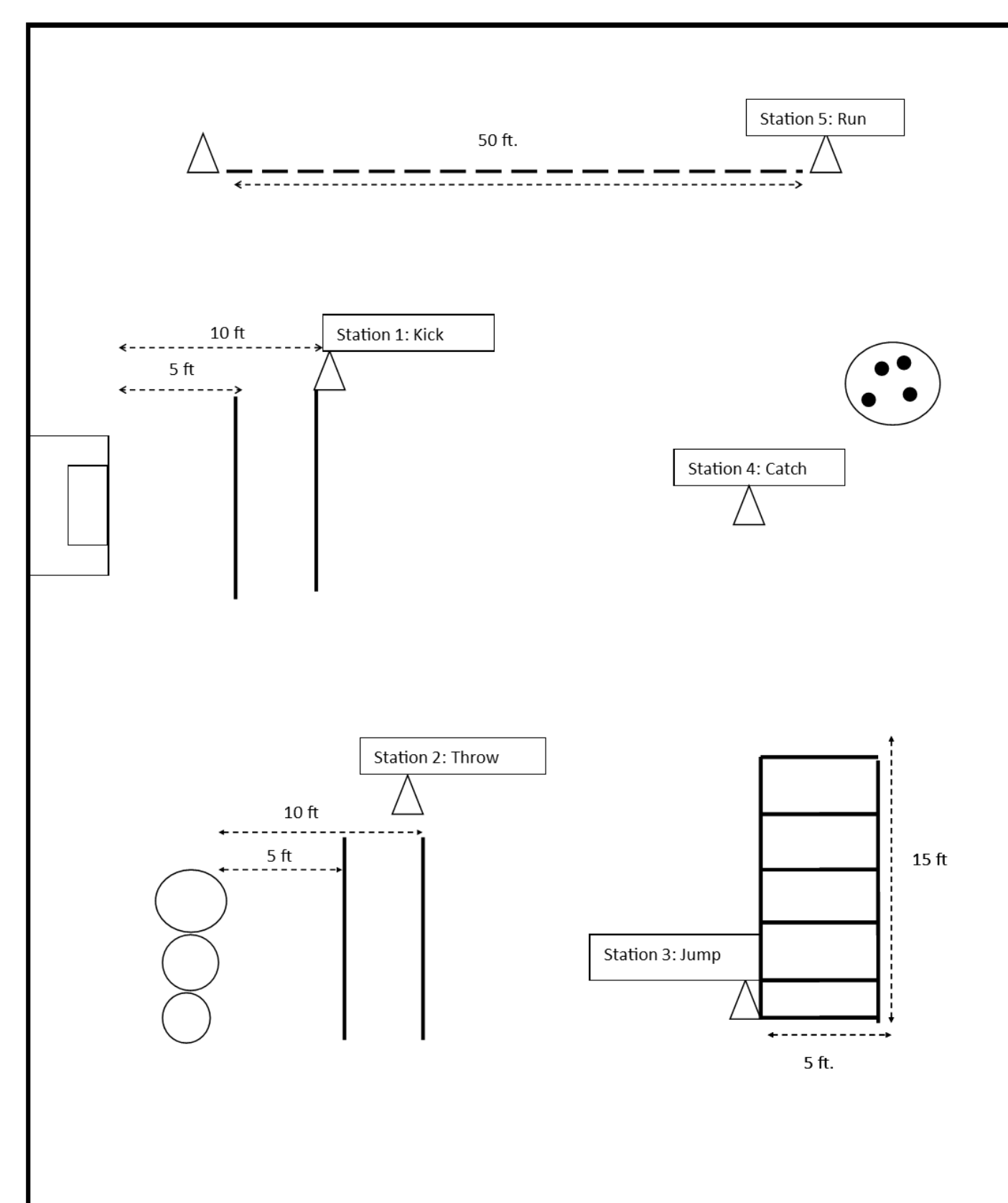


Figure 2: Stations in the motor skill activity

Results

Case Study Subjects	Gender	Age	# of Intervals using Motor Skills/Total Observed Intervals	# of Intervals engaged in Peer Interaction/Total Observed Intervals	Motor Skills Performed during Peer Interaction
A	Female	16	9/50	2/50	Run
B	Male	16	25/46	2/46	Throw, Catch

Figure 3: Case Studies

- Figure 3 shows that Subject A spent 18 % performing motor skills and 4 % socially interacting with peers during the activity. Subject B spent 54. 3% performing motor skills and 4.3 % socially interacting with peers during the activity.
- A Pearson's correlation coefficient was computed to assess the relationship between motor skill performance and social behavior. This computation included all subjects.
- **Correlation Analysis:** There was no correlation between the number of skills performed per minute during the activity and the percent of total visible intervals in which child interacts with peer, $r=.316$, $n=10$, $p=.373$.

	Total Motor Skills Observed during Motor Activity	Skills per Minute during Motor Activity
Percent of Total Visible Intervals in Which Child Interacts with Peer	$r=.275$ $p=.441$ $n=10$	$r=.316$ $p=.373$ $n=10$
Total Number of Intervals with Peer Interactions	$r=.270$ $p=.451$ $n=10$	$r=.309$ $p=.385$ $n=10$

Figure 4: Correlation table

Conclusion

- Between the 2 case studies from Figure 3, there is no apparent correlation between social behavior and motor skill performance in a physical activity setting in children with physical disabilities.
- **Limitations:**
 - The environment IMPACT provides may not be the best environment for a subject to interact with peers, because they typically interact with their assigned volunteer throughout the sessions.
 - The motor skill activity was not designed to be socially interactive specifically with peers. This ambiguity suggests that we could not expect much peer interaction, if any.
 - Some subjects had to be placed in an unfamiliar social environment to partake in the study, which potentially had an effect on the amount of social interaction and motor performance in the activity.

- This study differs from other social behavior studies in physical activity, because many use subjective measures of children engaged in socially interactive activities³. The study objectively measured social interaction in a activity that is not socially-oriented.
- This study is beneficial because it shows that incorporating peer interaction may still be considered as a method to improve motor skills in children with physical disabilities.
- Further study can be conducted by examining the relationship between motor skill proficiency and social interaction during physical activity with a larger sample size to further support physical therapy methods of integrating a social physical activity environment to achieve goals set in the clinic.

References

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