THE EFFECTS OF ENGAGING IN FAMILY CENTERED PHYSICAL ACTIVITY PROGRAM ON PHYSICAL ACTIVITY LEVELS OF FAMILIES WITH A CHILD WITH A DISABILITY

By

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ABSTRACT

THE EFFECTS OF ENGAGING IN FAMILY CENTERED PHYSICAL ACTIVITY PROGRAM ON PHYSICAL ACTIVITY LEVELS OF FAMILIES WITH A CHILD WITH A DISABILITY

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Problem: Children with disabilities are less likely to reach the daily recommendation (60 minutes) of physical activity a day. Participating in physical activity every day can significantly decrease the chances of developing chronic, secondary and associated conditions while also increasing moral, cognitive function, and wellbeing. Parental support and role modeling of positive physical activity behaviors can influence the activity levels of their child. **Purpose**: To analyze the effects of engaging in a family centered physical activity program on physical activity levels of kids with disabilities and their families. **Method:** A 7 week summer program where a family self-reports their physical activity throughout the summer. **Results**: The family's total physical activity decreased during the summer program. **Discussion**: These results do not align with previous research on family centered physical activity programs where total physical activity increased over the course of the program. This might be due to low participation rate in the program and lack of communication with the participant over summer.

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INTRODUCTION

Children who are exposed to meaningful physical activity (i.e. in a fun and positive environment) at a young age tend to meet the recommended 60 minutes a day of physical activity more frequently (Brown et al., 2015; Downs, Fairclough, Knowles & Boddy, 2016; Goodwin & Watkinson, 2007; Rimmer & Rowland, 2008). Meeting the daily recommended amount of activity promotes a healthy lifestyle and will also reduce the chances of experiencing chronic illnesses (Warburton, Whitney & Bredin, 2006). This is particularly important for children with disabilities because they tend to live a more sedentary lifestyle and as a result, experience negative health impacts beyond those experienced by individuals without disabilities (Rimmer, Riley, Wang, Rauworth & Jurkowski, 2004).

Physical activity habits are influenced by social interactions including interaction and support from their parents (Beets, Cardinal & Alderman, 2010; Sit et al., 2017). Parents who are physically active are more likely to support a physically active lifestyle for their child, especially if they share the activity with their child because it shows the child that the parent supports them (Moore et al., 1991). Engaging in a fitness program that requires the family to set fitness goals, while also focusing on the benefits of physical activity has been shown to be a good way to get both parents and kids active (Brown et al., 2015). Since Humboldt County is a rural area with few community opportunities for adapted physical activity, family centered fitness programs might provide a viable avenue to improve physical activity engagement of children with disabilities. Therefore, the

purpose of this study is to analyze the effects of engaging in a family centered physical activity program on the physical activity level of a young adult with a disability and their parent.

LITERATURE REVIEW

Youth with Disabilities and Physical Activity

The recommended amount of physical activity that youth should participate in is one hour (60 minutes) a day (Rimmer & Rowland, 2007; Downs, Fairclough, Knowles & Boddy, 2016). Children with disabilities are less likely to reach this recommendation than children without disabilities and tend to spend much more of their free time engaged in sedentary activities (Rimmer et al., 2004). Factors that contribute to this decreased physical activity and increased sedentary time include a lack of appropriate physical activity programs, untrained supervision, lacking important cognitive and motor skills, and financial barriers (Block, Taliaferro & Moran, 2013). Additionally, children with disabilities tend to need more support with physical tasks and explicit instruction than those without disabilities (Eriksson, Weland & Granlund, 2007). Due to these barriers, many children with disabilities are not given the same opportunities that are available to their peers without disabilities (Moran & Block, 2010).

Childhood is a critical time for the development of skills and behaviors (like regular engagement in physical activity) that an individual will carry into adulthood (Rimmer & Rowland, 2007). Early childhood interactions are considered to be a critical part of development that often changes in complexity and frequency as the child grows up (Ladd & Coleman, 1993; Rubin, Bukowski & Parker, 1998). When children are given

the opportunity to participate in meaningful activities (e.g. joyful physical activity and reach individual goals), it creatives a positive attitude towards physical activity (Goodwin & Watkinson, 2007). Therefore, providing opportunities to engage in meaningful physical activity before adolescence helps maintain a sufficient amount of daily physical activity into adulthood (Brown et al., 2015).

Health Outcomes

Promoting an active lifestyle at an early age for children with disabilities is important to improve well-being, mental health, and social interactions, and prevent or reduce the severity of associated, secondary, and chronic conditions (Hundert & Houghton, 1992; Johnson 2009; Law, 2002; Martinsen, 2009; Rimmer and Rowland, 2008; Smith et al., 2005; Solish, Perry & Minnes, 2009). Psychologically, physical activity has been shown to increase self-esteem and energy levels (Fontaine, 2000) and decrease in depression, anxiety, and low self-esteem (Martinsen, 2009). Meaningful, successful physical activity engagement also influences how children view themselves, how their behavior affects their feelings, and how their feelings influence what they think of their own efforts (Martinsen, 2009). When participating in successful physical activity, people change their perceptions of themselves in a positive way, especially those with low self-esteem, depression and anxiety (Fox, 1999).

Participation in daily physical activity also contributes to the prevention of chronic diseases such as diabetes, obesity, cancer, hypertension, osteoporosis and arthritis (Warburton, Whitney & Bredin, 2006). This prevention is an effect of the impacts of

physical activity on fitness including increasing cardiovascular endurance, muscular endurance, muscular strength and aerobic endurance (Sothern, Loftin, Suskind, Udall & Blecker, 1999). Additional physical benefits include increasing bone density, reducing the chances of osteoporosis and other bone degenerative diseases (Blimkie, 1993) and stimulation of the immune system (Shephard, Rhind & Shek, 1994). For children with disabilities who experience spasticity, seizures, pain or fatigue easily, physical activity helps reduce these symptoms (Rimmer, Rowland, Yamaki, 2007; Scholtes et al., 2010). Muscle spasticity, which causes a loss of motor control, can be greatly reduced by participating in regular exercise and physical activity (Scholtes et al., 2010). Being physically active at an earlier point in life will help prevent chronic illnesses while also promoting health benefits both physically and mentally (Sothern et al., 1998).

Impact of Family Participation

The physical activity levels of children are greatly influenced by the environment and people they spend time with (Sit et al., 2017). One of the primary support systems and influencers of physical activity that children receive is their parents (Beets, Cardinal & Alderman, 2010). Parental modeling of positive health behaviors has a significant impact on children's lifestyles since kids tend to model health behaviors they see (Nader et al., 1996). The promotion of physical activity is mainly conducted in schools, but when looking at the impact of school-based programs on physical activity overall, there are some doubts that it actually works (Brown et al., 2015). This is due to the belief that without the parents being involved, the long term change of having a physically active

life is less possible (Brown et al., 2015). During school, the students are exposed to a period of physical activity and are given an opportunity to accumulate the daily amount of physical activity (Alderman, Benham-Deal, Erwin & Olson, 2012; Meyer et al., 2011). Although this provides a regular schedule and opportunity for children to be physically active, many children do not use this time to exercise so their physical activity levels are still low (Meyer et al., 2011).

Generally, children's physical activity time is higher on days that they are at school and have physical education which highlights the need for improved parental facilitated physical activity opportunities (Alderman et al., 2012). The involvement of family members in physical activity is a facilitator for a long-term change in activity levels in children (Brown et al., 2015). Parents who are more active are more likely to encourage their children to participate in physical activity as well (Moore et al., 1991). Parental support is closely connected with their children being able to identify and request opportunities for physical activity (Palmer & Bycura, 2014). Moreover, when parents share exercise activity time with their child, it shows that the parents support them and therefore, children will have a higher likelihood of being more physically active (Moore et al., 1991).

With the importance of parental support and modeling to improve child physical activity levels, physical activity programs that target the entire family may maximize physical activity outcomes. Family centered programs that were seen as most effective were those that had reinforcements to goal setting and also focused on all the additional benefits (e.g. team building and healthy outcomes) of being physically active with the

family (Brown et al., 2015). Additionally, programs that help modify lifestyle and behavior have been found to have the most long term impact (Panagiotopoulos et al., 2011). Parental involvement and support of programs may be the missing link to attainable physical activity participation (Brunton, 2017). Parents who are involved in the community setting and know what programs are offered can help facilitate the engagement of physical activity for children with disabilities (Brunton, 2017).

PURPOSE OF STUDY

The purpose of this study is to analyze the effects of engaging in a family centered physical activity program on the physical activity levels of a young adult with a disability and their parent. The hypothesis of the study was that all members of the family would increase their physical activity levels over the course of the program.

METHODS

Participants

The family was recruited from HSUfit, a Friday evening program in the spring semester that brings children with disabilities to campus for inclusive gym and pool activities. The inclusion criteria for this study was that one of the children in the family had to have a disability, and the ability to communicate in English. The family that participated in the FitFam Program included one parent and one son. The son was 20 years old and had Down Syndrome. He had no reported limitations to physical activity engagement and had been a regular participant in Humboldt State University sponsored programs in adapted physical education. The program started with 12 families, but only one completed the summer program due to being too busy with work.

Instruments/Measurements

For the duration of the family fitness program, the activity levels of the participants were self-reported once a week using Google Forms. The online form included the duration, type of activity and level of perceived exertion for each activity engaged in by each family member, every day.

Procedures

The family participated in a summer physical activity program (Humboldt State Family Fitness Program) as part of this study. The Family Fitness Program consisted of two phases, phase one was one week of in-person programming and phase two was seven weeks of independent physical activity. In phase one, the child participated in a researcher facilitated physical activity program that focused on social emotional behaviors and developing skills and abilities to improve motor performance and physical fitness. During this week, the parents participated in a 30 minute information session each day to receive instruction in how to support their child's engagement in home and community based physical activities. Instruction included how to modify activities and equipment to meet their child's needs, finding accessible physical activity opportunities in the community, setting physical activity goals for the family and child, overcoming barriers to activity, and making physical activity plans.

At the end of the weeklong in-person program, the parents received a self-directed physical activity plan from the program staff that highlighted activities for the family to engage in during phase two of the program. These physical activity plans were designed based on results from FitnessGram testing conducted during phase one of the program and provided activity suggestions to improve aspects of fitness that the child scored under the norm on. During the self-directed activity, the parents logged the activities that each member of the family engaged in including the duration and perceived intensity level of the activity. Logs were submitted to the researcher on a weekly basis, electronically through email. At the end of each week, the parents were emailed a reminder to fill in and return the weekly logs. To protect anonymity, the family was given an ID code to use on

their reports so that trends could be tracked for each family member but no directly identifying information was included in the data.

Analysis

To examine change over time of physical activity engagement, weekly physical activity totals are displayed in a line graph.

RESULTS

Graphs display total minutes of physical activity engagement by week in the program. Figure one below shows the child's light physical activity over the FitFam Program.

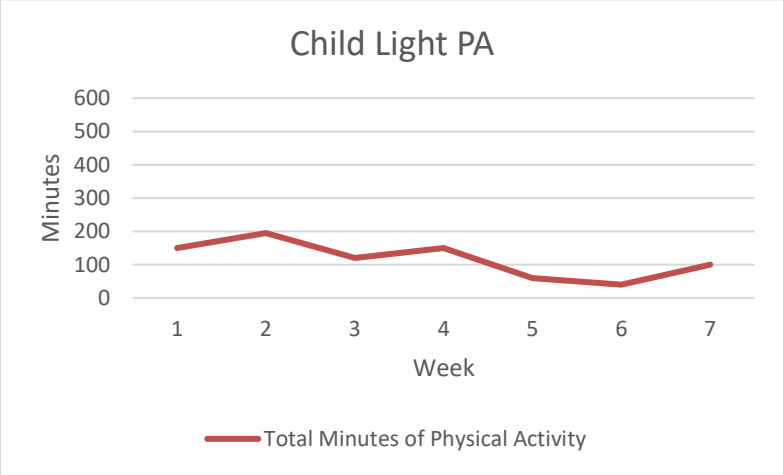

Figure 1: Childs Light Physical Activity

Although figure 1 shows that engagement in light physical activity was variable each week, the data suggests an overall decline in light activity throughout the program. Figure two below shows the child's light activity physical activity levels.

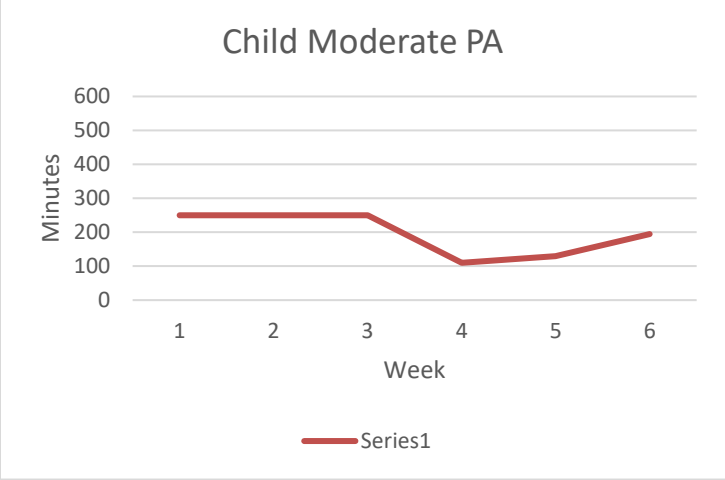

Figure 2: Moderate Physical Activity

The child started out at a consistent 250 minutes between weeks one and three and then had a decrease in moderate physical activity between weeks three and four. After week four, the child's' moderate physical activity level increased during the last couple weeks of the program but remained under the initial activity levels. No vigorous activity was reported for the child.

Figure three below shows the parents light physical activity levels.

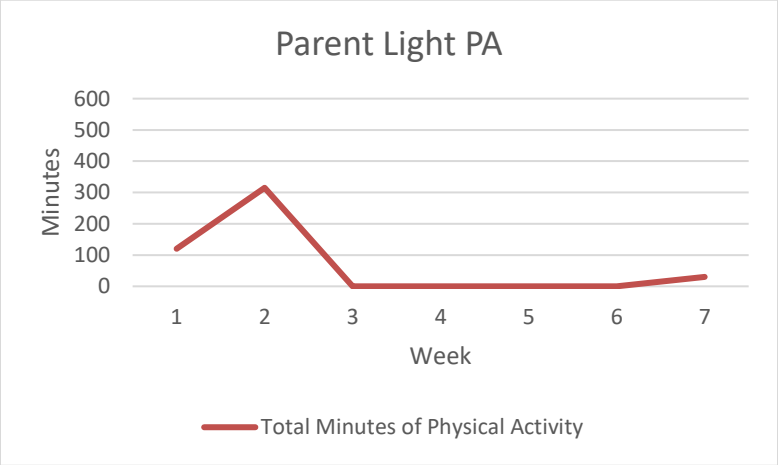

Figure 3: Parent Light Physical Activity

For the parents, engagement in light physical activity went up from week one to week two and then down to zero from week two to six. At week seven, there was a slight rise in light physical activity.

Figure 4 below shows the parent's moderate physical activity.

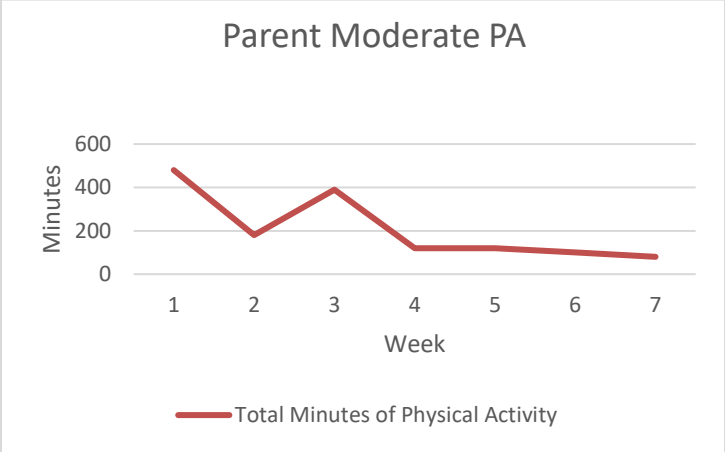

Figure 4: Parent Moderate Physical Activity

Overall, the minutes spent in moderate activity by the parent decreased over the course of the program.

Figure 5 below shows the parent's vigorous physical activity.

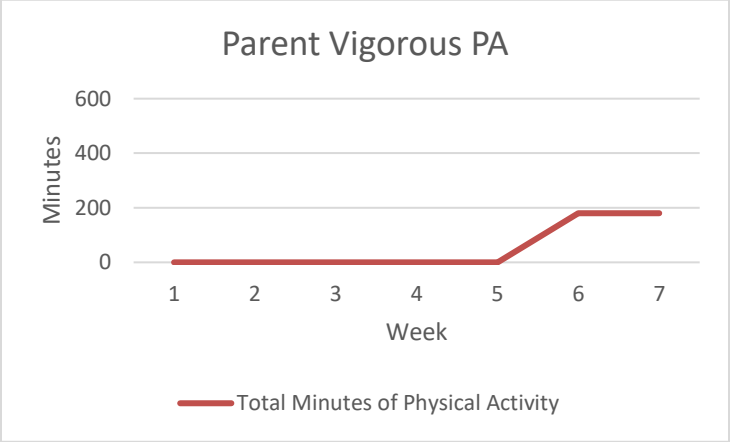

Figure 5: Parent Vigorous Physical Activity

From week one to five there were no minutes of vigorous activity reported. Between weeks five and seven there was a significant increase of vigorous activity by the parent.

DISCUSSION

The purpose of this study was to examine the effects of engaging in a family centered physical activity program on the physical activity levels of a young adult with a disability and their parent. The hypothesis of the study was that physical activity levels would increase over the duration of the program. However, the results showed that overall minutes of physical activity decreased throughout the program. At the start of the program, the child had a high amount of physical activity that slowly decreased over time. The high amount of moderate physical activity in the beginning was likely due to the child being enrolled in a summer camp not associated with this study. On the parental side, the parent had virtually no vigorous activity until the last three weeks when they started to bike to work.

At the start of this program, the family was instructed in the use of an activity log that they filled out during the duration of the program. The family reported the types of activities, duration, and intensity level of each activity they participated in every day and submitted it once a week to the researcher. Additionally, the family was given an exercise program that was tailored to their child's physical fitness needs based on Fitnessgram results. For example, if the student only performed five push-ups at the fitness assessment, a goal for the end of summer would be for them to do ten push-ups. The activities that aided their push-ups would be to slowly build in the number of push-ups they completed a day, or engaging in some other upper body resistance training. The purpose of this exercise program was to provide the family with a guide for activity

participation to follow throughout the summer and fitness related goals to work towards. Research indicates that self-regulation helps participants monitor, and compare, their own behavior and progress towards their goal (Carver & Scheier, 2001). The weekly physical activity logs were utilized as a self-regulation strategy as a way for the families to monitor progress towards their goals and adjust activity levels to better meet these goals. Additionally, including the entire family in the physical activity program, was intended to add motivation to all family members as they would have more social support for engagement and be accountable to each other.

While this study showed a decrease in physical activity, other studies that included family based fitness programs have shown significant increases in physical activity for both the parents and their children (Brown et al., 2016, Barr-Anderson, Alhassan, Adams Wynn & Whitt-Glover, 2014). For example, Barr-Anderson et al., (2014) conducted a program that included family and community based physical activity for middle school ages girls (10-14 years old). In this program, there were five, 50 minute sessions where the researcher provided group based physical activity and education on strategies for goals setting and reinforcement of behaviors. At the end of these sessions, the researchers also provided each participant with an "exercise" kit to help them be active at home. This program, utilized consistent feedback and contact throughout the duration of the programs in an effort to provide the families tailored support and feedback to keep them on track for their goals. This communication strategy was employed in other programs that had positive effects on activity levels (Brown et al., 2016, Salmon et al., 2007, Salli & Saelens, 2000) that provided multiple check-ins and specific feedback

on participant physical activity engagement. In the current study, the fitness program that was given to the family was reinforced through the weekly logs rather than direct counseling from the program facilitators. The family may not have followed their program due to communication throughout the summer, which was emailing the researcher once a week through email. More specific and direct support on meeting physical activity goals of the program may have more positively influenced the outcome of the study.

For future research, the researcher should have more back and forth contact with the families to provide feedback about program engagement and help them adjust physical activity goals. The researcher should also provide more instruction on filling out physical activity logs to have information be as explicit as possible about the type of activity engaged in. For example: exercises for 10 minutes at a moderate level doing resistance exercise does not provide as much insight into the types of activities the participants engaged. This could be done by the researcher by providing an example of what a thoroughly completed log looks like for the families to refer to when filling them out. These adjustments may provide the family with more support for engaging in the program and provide the researcher more specific information on the physical activity that the family engaged in to assess program impacts.

CONCLUSION

The results of this study did not support the hypothesis that the family participating would have increased physical activity over the duration of the program. Having activity levels decrease during family interventions counters the evidence for many programs. Brown et al., (2016), Salmon et al., (2007), Salli & Saelens (2000) and Barr-Anderson et al., (2014) all had a significant increase in physical activity as a result of family based physical activity programs. One of the biggest differences between those studies and the current one was the amount of contact time that the researchers had with the families. Contact time is important to have in physical activity programs in order to support participants in overcoming unexpected barriers to physical activity and engaging in the recommended activities. In other studies, the researchers contacted families via phone, feedback on logs or in person at least once a week. This allowed the families to have any questions answered and also allowed for the researcher to give corrective or constructive feedback. Utilizing that communication style in this program may have resulted in more positive outcomes.

Limitations

Limitations of the study included reliance on self-report for accurate and consistent reporting on the duration of physical activity, perceived exertion, the type of

disability and their performance levels, and consistency with physical activity. Another limitation could have been that, since the family that engaged in the program was recruited through an existing community based physical activity program, they already valued physical activity and engaged in higher levels without needing support from the program.

Delimitations

The delimitations of the study were that the family had to include at least one child with a disability and had to be able to communicate in English.

Assumptions

It is assumed that the parents provided accurate and honest reporting of the physical activity that each member of the family engaged in and that the family engaged in the physical activity program provided to them at the end on phase one of the study.

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APPENDIX

Physical Activity Log

Day	Activity	Duration	Intensity*	Hours of sleep	Quality of sleep*
Monday					
Adult 1					
Adult 2					
Child 1					
Child 2					
Child 3					
Tuesday					
Adult 1					
Adult 2					
Child 1					
Child 2					
Child 3					
Wednesday					
Adult 1					
Adult 2					
Child 1					
Child 2					
Child 3					
Thursday					
Adult 1					

Day	Activity	Duration	Intensity*	Hours of sleep	Quality of sleep*
Adult 2					
Child 1					
Child 2					
Child 3					
Friday					
Adult 1					
Adult 2					
Child 1					
Child 2					
Child 3					
Saturday					
Adult 1					
Adult 2					
Child 1					
Child 2					
Child 3					
Sunday					
Adult 1					
Adult 2					
Child 1					
Child 2					
Child 3					

*For intensity, please use the following scale: 1 = slow/easy, 2 = medium/moderate, 3 = fast/ very fast

For quality of sleep, please use the following scale: 1 = Woke up many times during the night, 2 = woke up few times during the night, 3 = did not wake up during the night