

Intellectual Disabilities:  
Effects of Physical Activity on Academic Performance

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### **Abstract**

Research has been completed to show that physical activity has a positive effect on students' academic success. Little research has been done to show the effects of physical activity on students with intellectual disabilities' academic success. A qualitative descriptive questionnaire was used to examine the effects of daily physical activity on students with intellectual disabilities' academic success. The study took place at a rural Midwest school district and the students of focus in this study included students who are identified with an intellectual disability and range from grade Kindergarten through grade five. Special educators, general educators and a parent/guardian involved in the students' lives completed the questionnaire and shared information and thoughts on students' level of activity and the effects of daily physical activity on students with intellectual disabilities' academic success. The participants indicated that students were physically active on average five days a week and for 30-60 minutes a day. Results were mixed, but some demonstrated that immediately after physical activity students are sometimes tired, overly stimulated, hyperactive, irritable, and difficult to calm down. Academic tasks after a physical activity can be difficult to focus on and students need a period of time to transition back into the classroom setting. Positive results included it was helpful for some students to burn off excess energy and contribute to focusing, and that some students were happier after the activity.

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### **Intellectual Disabilities: Effects of Physical Activity on Academic Performance**

Intellectual disabilities used to be classified under a blanket term of “mental retardation.” This special needs category has been expanded to several conditions and syndromes. Some examples include attention deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD), down syndrome, fragile X syndrome, and Klinefelter syndrome (Pitetti, Beets, & Combs, 2009). Students with intellectual disabilities have been in schools for many years and will be for years to come. Extensive research has been done on these students and how to better educate them specifically in the public schooling system, however little has been done around physical activity with this population. Chapter one will discuss this problem, the purpose of the study, the research question, the nature and significance of the study, the terms used, assumptions, limitations, and finally delimitations.

#### **The Problem**

Inactive children have become a growing problem in this country. This has led to obesity problems in young children who later turn into adults who do not know how to keep their bodies healthy (Abadie & Brown, 2010). This has further prompted research done on the effects of physical activity on students’ academic performance. The results have shown a positive effect of activity on academic performance (Abadie & Brown, 2010; Chomitz, Slingsing, McGowan, Mitchell, Dawson, & Hacker, 2009; Hillman, Erickson & Kramer, 2008; Van Dusen, Kelder, Kohl, Ranjit, & Perry, 2011). However, little research has been done to show the effects of physical activity on students with intellectual disabilities. How does daily physical activity affect students with intellectual disabilities and their academic performance? If the effects are positive ones then special educators and general educators will have more strategies to improve the academics of students with intellectual disabilities.

### **Purpose of the Study**

The purpose of this study is to survey educators and parents/guardians to see if they have noticed benefits or concerns of daily physical activity and their students' academics. The goal is to see if daily physical activity could significantly improve their students' academic skills. Educators are always looking for ways to improve students' skills and if physical activity is one of them then these activities can be implemented. Alongside the use of physical activity to improve academics is another question. How does physical activity affect a student's behavior? If a child is not having behavior issues they will be less distracting to themselves, the educators, and their peers in the classroom. This concept may give educators the opportunity to explore more positive ways to address academics and behavior.

### **Research Questions**

Contemporary issues have focused on the obesity rate in school-aged children and how inactive these children are (Abadie & Brown, 2010). Not only should there be a focus on general education students but there needs to be more research on the effects of physical activity on students with intellectual disabilities. If there are positive effects of physical activity then schools will be more aware of their vital role in the matter.

The main focus of the study is to look at whether daily physical activity has an effect on students with intellectual disabilities' academic performance or not. This study will also attempt to answer the following questions: (1) On average how many days a week and minutes per day are children with intellectual disabilities being physically active? (2) How involved are special education teachers in providing physically active time for their students? (3) What are teachers' thoughts on the reduction in physical education classes? (4) What type of change is seen in the students after they are physically active? (5) After a student with intellectual disabilities

participates in a form of physical activity does his/her behavior appear to improve in the classroom or get worse? (6) After a child is physically active in what ways does his/her academic skills appear to improve in the classroom?

### **Nature of the Study**

This study will utilize a qualitative methodology with a survey instrument to collect data. The study will include surveying parents/guardians and general/special educators in a local school district. The school district will first give permission for the study to take place. The survey will be sent to all general education teachers with students who have intellectual disabilities, special education teachers of students with intellectual disabilities, and parents/guardians of children with intellectual disabilities. They will fill out a survey specific to their role in the child's life. The questions will be directly related to the research questions stated in the above section. Once the data is collected it will be sorted into categories of "parents/guardians," "general education," and "special education." After the surveys have been separated, then the investigator will look for patterns in the participant's answers. The final step will be to share the information found in the study.

### **Significance of the Study**

Educators are always looking for better ways to have inclusion in the general education classroom and improve students with intellectual disabilities' academic skills. If physical activity proves to show positive effects on students with intellectual disabilities' academic performance then the education field has made progress. As far as behavior goes many negative consequence programs are available to educators. Often times a behavior is seen as a poor choice and students have a negative consequence in some way. If physical activity can help reduce poor behavior choices in the classroom then more students will have an increased positive learning

environment. Also, physical education programs are slowly getting cut in many school districts (Chomitz et al., 2009). Therefore, studies need to be done to support that physical education, and getting our students active daily is a vital component to their education.

### **Definition of Terms**

Intellectual Disabilities- The term “intellectual disabilities” may not be used in all of the United States. Each state tends to use different terms for this, and that may include developmental and cognitive disabilities (DCD), cognitive disabilities (CD), or mental retardation. Within this study intellectual disabilities will include disabilities identified by the special education team in the school of study. For purposes with this study children with mild, moderate, or severe intellectual disabilities may be included.

Elementary-aged Children- For the purpose of this study an elementary aged child will include children in grades Kindergarten through grade five.

Physical Activity- It is suggested that school-aged children participate in at least 60 minutes of moderate to vigorous exercise five days a week (Pitetti et al., 2009).

Inclusion- This is when children with special needs are placed within general education settings with or without extra assistance from an adult. The general educator must plan, modify, and deliver content to students with special needs (Combs, Elliot, & Whipple, 2010). For purposes of this study the child with intellectual disabilities will be included a minimum of one hour a day or more.

### **Assumptions**

It is assumed that subjects in this study will answer the survey questionnaire completely and truthfully. The subject’s personal and professional experience within the field of education will influence his/her perception. Through previous studies it has been shown that physical

activity has been beneficial for students. This study will assume that physical activity will have some positive effect on students. It is also assumed that the investigator can produce quality data without any reliability check.

### **Limitations**

The limitations of this study will include the short amount of time that the study will be performed. It will be conducted in just over ten months. The study will only cover a small sample from a rural school district in the Midwest. This may lead to regional differences from other parts of the country. Also, the questionnaire will not be tested for validity. The results of this study are based on perceptions of the teachers rather than direct outcomes from the students. Furthermore, the size of the sample will be limited to one elementary school which leaves limits for generalizing the findings.

### **Delimitations**

The study will be limited to elementary aged children to see the effects of physical activity on younger children's academic performance. The study is also specific to parents/guardians and educators of students only with intellectual disabilities. This is to specifically focus on the effects of physical activity on this population of students.

### **Conclusion**

This study will provide more information for special education and general education teachers of students with intellectual disabilities. Often times there are academic ways of improving student's knowledge but are there outside entities that can also benefit students such as exercise? This study will attempt to contribute to a research gap for students with intellectual disabilities and the effects of physical activity on their academic performance. The research questions will primarily focus on how physical activity seems to affect a child's focus and

behavior in the classroom. The study involves the primary adults in the students' lives. In Chapter Two a literature review will be provided. This will show that many studies have been done to show the importance of physical activity on a student's academic performance, and that there is a gap in this area of research for students with intellectual disabilities.

### **Literature Review**

Students with intellectual disabilities have been a part of school since the 1970s. These include disabilities like, but not limited to, attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD), down syndrome, fragile X syndrome, and mental retardation (Pitetti et al., 2009). All populations of children have had growing numbers of children who are obese. A growing concern in the United States has been the obesity among school age children. This chapter will be reviewing the effects of physical activity on school age children, and look at the gap in the literature for students with intellectual disabilities. There have not been nearly as many studies done specifically on the effects of physical activity on academic performance of students with intellectual disabilities. In relation to childhood obesity and students with intellectual disabilities, studies have shown the attitude of physical education teachers toward inclusion in their physical education classes makes a big difference for student success. Many of these articles have shown how schools play a vital role in the physical fitness of all children, and how general educator's attitudes toward inclusion have an impact on this.

### **Physical Activity in Relation to Children**

School age children have become more invested in technology than that of physical activity (Abadie & Brown, 2010). In recent generations, technology has become a large part of everyday life. It is involved in adults' workdays, and it is also involved in students' school days. With this said, it is highly recommended that children get *at least* 60 full minutes of moderate to intense physical activity nearly every day of the week (Everhart, Dimon, Stone, Desmond, & Casilio, 2012; Pitetti et al., 2009). Students spend a majority of their time at school; and therefore, it is important for schools to play a vital part in advocating for students to have active lives (Van Dusen et al., 2011). Many school educators and administrators worry that the choice

to increase physical education time will negatively affect the time needed for other subject areas. The passing of the *No Child Left Behind Act of 2001* has increased pressure for schools to focus more solely on subjects like math and English (Abadie & Brown, 2010). This has led to at least 14% of schools in the United States decreasing physical education classes offered (Chomitz et al., 2009).

Numerous studies have been conducted on the effects of physical activity on school age children's academic success. Several studies within reference have conducted research to prove that physical activity has a positive impact on student's academic success. A student's health is linked between body and mind, and if the body has not exerted itself then the mind will not be working at its fullest (Abadie & Brown, 2010).

Previous studies have also shown that physical activity is helpful toward a student's working memory (Abadie & Brown, 2010), but other studies have stated that memory is one portion of cognition that is not affected by physical activity (Hillman et al., 2008). Another contradiction found is that the more intense and vigorous the activity is the more beneficial it will be for the student's cognition. Other researchers have stated that simply moving for any length of time will improve the academic performance of students (Abadie & Brown, 2010; Cannella-Malone, Tullis, & Kazee, 2011). Research has shown that simply exercising is beneficial for student's cognitive improvement; however, portions of research that is lacking is finding the more effective exercises, and length of exercise, that will improve cognition in the best possible way (Hillman et al., 2008).

It has been shown that cardiovascular health has the highest correlation with academic success. Students who have healthy levels of cardiovascular health had the highest level of cognition compared to other portions of body health like flexibility or muscle strength (Van

Dusen et al., 2011). Primarily through animal studies, and not human studies, it has been shown that through exercise there can be more neural connections made. Animals have also shown through exercise a positive impact on neural systems and therefore improved cognition (Abadie & Brown, 2010; Chomitz et al., 2009; Hillman et al., 2008; Nicholson, Kehle, Bray, & Heest, 2011). The last piece of research that was a consensus was that when students were physically active their math performance on standardized testing was more positively affected than the student's English scores. They both yielded better success than the healthy student's counterparts, but math had a higher rating of success (Van Dusen et al., 2011; Chomitz et al., 2009).

### **Inclusion Attitudes**

Inclusion has been a topic of interest within the education field for several years now. Many educators have discussed how to successfully include students with disabilities in the general education classroom. A qualitative study done by Combs et al., (2010) looked at physical education teachers' attitudes toward the inclusion of students with disabilities in their general physical education classes. Attitude research has become increasingly popular. This research generally includes items like surveys or interviews to see how educators feel about different components of education. Combs et al., expressed that attitude research has become popular in the education field. The attitudes of teachers on a daily basis directly affect students and their learning.

Combs and her colleagues looked intently at four physical education teachers and interviewed them on inclusion in their classrooms. Schools have had differing opinions as to whether students with special needs are sent to physical education with special education assistants or alone. This can pose problems when challenging behaviors are present in the

classroom, and many physical education teachers have asked for assistance with this. Physical education teachers with a longer list of objectives and focus for their physical education classes have a better attitude toward inclusion of children with special needs. A physical education teacher who is prepared with accommodations for special education students is going to have more success with these students in their classrooms. If an educator is prepared then the whole class period is going to go much more smoothly (Combs et al., 2010). Colleges and universities need to implement coursework for pre-service physical education teachers to work with children who have special needs, because this will better prepare these teachers for their careers with inclusion. All children have the right to free and appropriate public education and inclusion is a part of this. When administrators are looking for a physical education teacher it should be noted that teachers need to have a positive attitude toward inclusion (Combs et al., 2010).

### **Intellectual Disabilities**

Little research is available to show the effects of physical activity on students with intellectual disabilities' academic success or improvement (Everhart et al., 2012; Pitetti et al., 2009). Students with intellectual disabilities face differing attitudes toward their inclusion in general physical education classes (Combs et al., 2010), and often are omitted to avoid skewing results in studies about the effects of physical activity on academic achievement (Chomitz et al., 2009; Van Dusen et al., 2011). It is stated that students with intellectual disabilities may skew results because of their lower academic scores. Potential benefits have been noted in conducting more research to see if physical activity helped these students academically. Everhart et al. (2012) has shown that physical activity for students with intellectual disabilities has had a strong positive affect on those students' academic improvement. The gains in academic success seemed to be more prevalent in intermediate students (3<sup>rd</sup>-5<sup>th</sup> grade) versus primary students (K-2<sup>nd</sup>

grade). It was noted that when students performed more vigorous exercise, the academics that followed were done more proficiently (Everhart et al., 2012). People who have autism spectrum disorders have benefits of physical activity as well. It reduces stress and anxiety levels in these students. Within the classroom setting this is beneficial as students have a better chance of focusing on school work, and not their anxiety (Garcia-Villamisar & Dattilo, 2010).

Often for students with intellectual disabilities, finding leisure activity that incorporates physical activity that they will *enjoy* is vital toward success. These activities have been found to become a coping mechanism for students with intellectual disabilities, and they tend to be more resilient (Garcia-Villamisar & Dattilo, 2010). Based upon this research, it appears that students with intellectual disabilities who have challenging behaviors in the classroom can pose problems for the classroom teacher. Severe challenging behaviors like yelling, kicking, spitting, flopping, cursing, and throwing are a distraction in the classroom. They are not only a distraction for the other students, but also an issue for the student displaying these behaviors. Academic success cannot be present when these behaviors are occurring. If students with intellectual disabilities are given several chunks of time, along with various short breaks during the school day, they are more likely to reduce these challenging behaviors. The exertion of exercise for these students is an exertion of their aggression, stress, and self-injury (Cannella-Malone et al., 2011). With the use of physical activity these students' challenging behavior in the classroom was greatly reduced. It has been shown that exercise released neurological chemicals like norepinephrine, dopamine, and serotonin which in turn affect a student's arousal and attention (Nicholson et al., 2011).

**Conclusion**

No matter if a child has a disability or not, it seems physical activity is going to positively support the child's academic success. The physical activity helps to build neural connections in the students, to have healthy bodies, and this all helps them within the classroom (Abadie & Brown, 2010; Cannella-Malone et al., 2011; Chomitz et al., 2009; Everhart et al., 2012; Hillman et al., 2008; Nicholson et al., 2011; Pitetti et al., 2009). Only two studies investigating how physical activity can be effective for students with disabilities has been found. This study may contribute to the existing research base. If physical activity helps these students, then teachers can work better toward bridging the achievement gap. The United States has put a strong emphasis on math and English, and this has negatively affected physical education classes. Physical education is a vital part of a student's school day, and will assist students to perform better in the classroom (Chomitz et al., 2009). The schools have a vital role in advocating for all students to have healthy lifestyles in and out of school.

### **Methodology**

The purpose of this study was to work with parents/guardians and educators of students with intellectual disabilities to see if there were benefits or concerns to physical activity in relation to student academic performance. The goal was to see if adults felt that daily physical activity could significantly improve a student with intellectual disability's academic performance. The main research question was: how does daily physical activity affect students with intellectual disabilities and their academic performance? The research also included:

- (1) On average how many days a week and minutes per day are children with intellectual disabilities being physically active?
- (2) How involved are special education teachers in providing physically active time for their students?
- (3) What are teachers' thoughts on the reduction in physical education classes?
- (4) What type of change is seen in the students after they are physically active?
- (5) After a student with intellectual disabilities participates in a form of physical activity does his/her behavior appear to improve in the classroom or get worse?
- (6) After a child is physically active in what ways does his/her academic skills appear to improve in the classroom?

### **Design**

The research design of this study was qualitative using individual survey. Qualitative results were taken and patterns that educators and parents/guardians responded with were analyzed. This design was tied into the research question in that it analyzed whether or not daily physical activity had positive or negative effects on a child with intellectual disabilities' academic performance. Specifically, the study focused on how the students' behavior changed in the classroom and how this affected their academics. The research also took a look into how involved special education teachers chose to be in daily physical activity and their thoughts on

the reductions in physical education programs in elementary settings. The educators and parents/guardians attitudes have a strong effect on how the student's school day will go (Combs et al., 2010). Qualitative research allows a researcher to look at multiple aspects of a study. The field of education carries many descriptions, meanings, and purposes. Qualitative research in education allows the researcher to view concepts from different perspectives, situations, people, and relationships (Leedy & Ormrod, 2013).

### **Participants**

The students of focus in this study were identified with an intellectual disability and ranged from grade Kindergarten to grade five. The educators (special educators and general educators) and parents/guardians of these students completed a qualitative survey for those students. The sample chosen for this study was a sample of convenience from an elementary school in the Midwest. The study did not focus on the demographics of the school, but rather the study was specific toward students with intellectual disabilities. The participants were voluntary respondents. They were presented with the option to participate in the study, and chose to respond. The name of the school district and location were not shared or involved in the study. The educators and parents/guardians who consented to the study participated anonymously, and the students with intellectual disabilities were never identified.

### **Instrumentation**

This study used a descriptive survey as the means of data collection. The descriptive surveys were sent to the participants through an email and used a survey link to the *Survey Monkey* service provided through the internet. This reduced the use of paper and postage and increased the likelihood of participants responding to the survey (Leedy & Ormrod, 2013). Participants were also given an option of a hard copy survey if they wanted it. The use of these

surveys (see Appendix D, E, and F) was a good match for this study as the surveys aimed to collect educator and parent/guardian attitudes toward daily physical activity, and observed how children with intellectual disabilities reacted to daily physical activity (Combs et al., 2010). Combs et al., explain how attitudes within the field of education have a strong impact on education itself. The use of a qualitative study allows room for analysis of educators and parents/guardians' feelings toward daily activity and how this affects their students.

The survey questionnaires were developed by the investigator. The questions chosen were based on the literature review and the research question of this study. No pilot testing was conducted on the survey prior to the study.

### **Procedure**

The first step of this study was to gain permission from the Institutional Research Board (IRB) at the University of Wisconsin- Superior. The next step was that the administrators from the district of the school of choice were contacted for permission to conduct this study. The third step included delivering the teachers of that school the participant invitation, study overview and informed consent (see Appendixes A, B, and C). The investigator also provided a sufficient amount of time for the invitation, overview and informed consent to be distributed confidentially by school staff to parents of children with intellectual disabilities within their school. Upon receipt of consent forms from educators and parents the *Survey Monkey* link or a hard copy of the survey was provided. If there were any questions or concerns regarding the informed consent forms they were directed to a third party that is not involved in the research. Once the surveys were completed and submitted then the data collection began. Through the data collection, confidentiality continued, and the data was compiled into one document.

**Analysis**

Once the data was collected the results were divided into three categories. These categories were special education teachers, general education teachers, and parents/guardians of students receiving special education services. The qualitative results were investigated and patterns were analyzed. The findings were compared to studies that were reviewed in the previous chapter (literature review). The study looked at connections with previous studies and possible differences. The data was shared with the University of Wisconsin-Superior and professionals within the education field upon request. This can help to show if daily physical activity is a vital component to a child with intellectual disabilities education. The field of education can be improved if more behavioral and academic techniques are shared among educators.

## Results

A total of 13 students from grades Kindergarten through grade five were identified with an intellectual disability at a Midwest public school district used in this research for the 2013-2014 school year. There were a total of three special education teachers that had students with intellectual disabilities on their case load (Kindergarten through grade five) and there were six general education teachers (Kindergarten through grade five) who taught students with intellectual disabilities in their classroom. There were 13 students' parents/guardians who were recruited to participate in the study.

Table 1

### *Student Representation*

	S.1	S.2	S.3	S.4	S.5	S.6	S.7	S.8	S.9	S.10	S.11	S.12	S.13
<b>Grade</b>	K	K	K	K	1	3	4	4	4	4	5	5	5
<b>Parent.1</b>	O	O	O	O	O	X	O	O	O	O	O	O	O
<b>Sped.1</b>	X	X	X	X	X	O	O	O	O	O	O	O	O
<b>Sped.2</b>	O	O	O	O	O	X	X	X	X	X	X	X	X
<b>Gen.1</b>	O	O	X	X	O	O	O	O	O	O	O	O	O
<b>Gen.2</b>	O	O	O	O	X	O	O	O	O	O	O	O	O
<b>Gen.3</b>	O	O	O	O	O	X	O	O	O	O	O	O	O
<b>Gen.4</b>	O	O	O	O	O	O	X	X	X	X	O	O	O
<b>Gen. 5</b>	O	O	O	O	O	O	O	O	O	O	X	X	X

Key: S.# = represents the students identified for this particular study; O = This participant did not respond on this student; X- This participant responded on this student; Gen. = general education teacher; Sped. = special education teacher

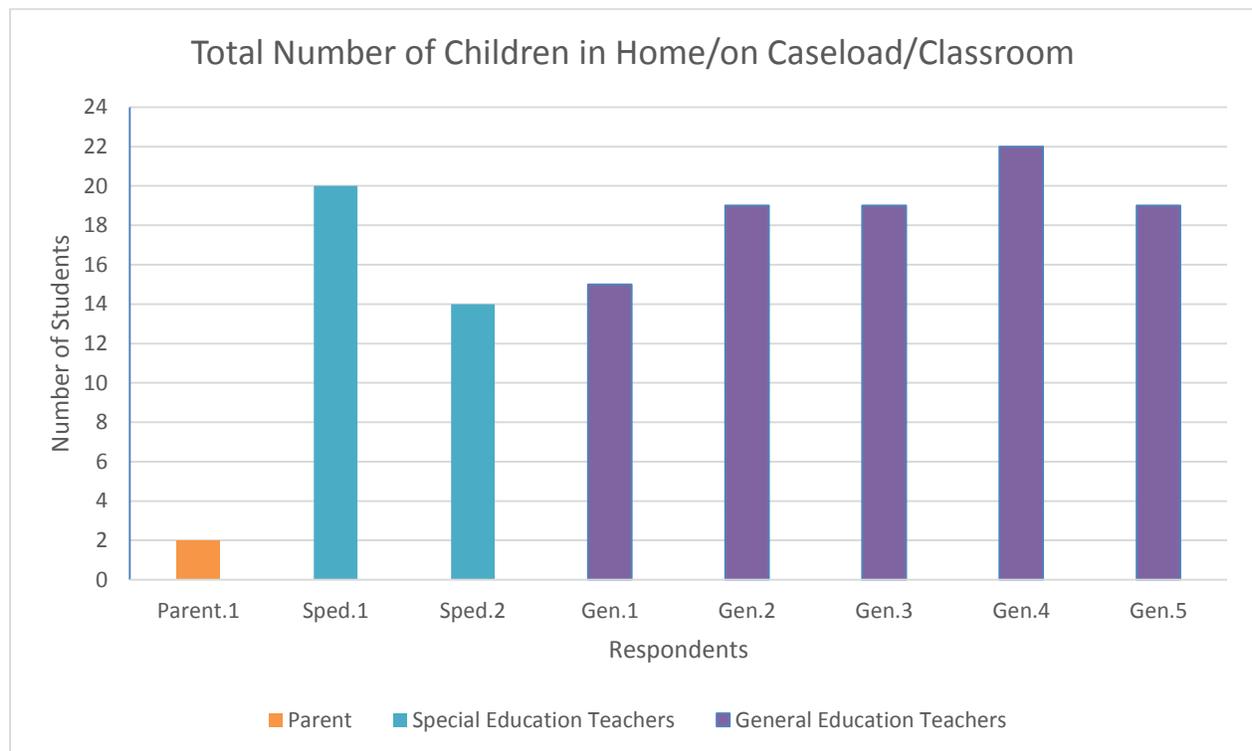
As displayed in Table 1, one of the 13 parents/guardians completed the informed consent and descriptive questionnaire. This parent represented student six. There were three special education teachers who were recruited to participate in the study, however, only two of the three special education teachers completed the informed consent and descriptive questionnaire. Special education teacher 1 represented student 1 through student 5. Special education teacher 2 represented student 6 through student 13. There were several students identified with intellectual

disabilities at this school that were not represented in the study as a result of one of the three special education teachers choosing not to participate.

There were six general education teachers who were recruited to participate in the study and six of the six general education teachers completed the informed consent and five of the six general education teachers completed the descriptive questionnaire. General education teacher 1 represented student 3 and student 4. General education teacher 2 represented student 5. General education teacher 3 represented student 6. General education teacher 4 represented student 7 through student 10. Lastly, general education teacher 5 represented student 11 through student 13.

**Questionnaire: Question Number One**

Figure 1

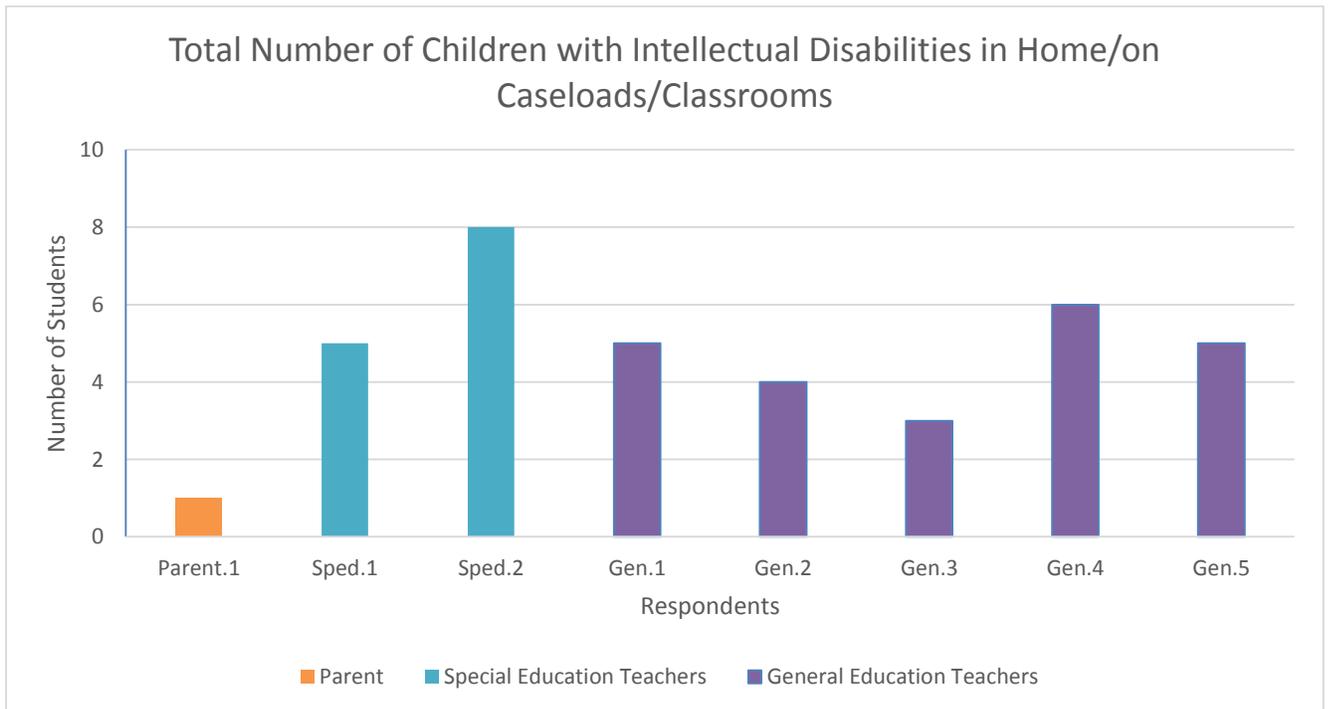


Note. 15 = represents a range that respondents gave of 15-18 students in their classroom; 19 = represents a range that respondents gave of 19-21 students in their classroom; 22 = represents a range that respondents gave of 22-25 students in their classroom

The descriptive questionnaire first asked the parent, both special education teachers, and general education teachers the number of children total they work with daily. The parent questionnaire asked, “How many children do you have?”. The special education questionnaire asked, “How many students do you have on your caseload?”. The general education questionnaire asked, “How many students are in your classroom?”. In Figure 1 it is seen that the parent respondent had two children in his/her home. The special education teacher 1 had 20 students on his/her caseload and special education teacher 2 had 14 students on his/her caseload. General education teacher 1 had 15-18 students in his/her classroom, general education teacher 2 had 19-21 students in his/her classroom, general education teacher 3 had 19-21 students in his/her classroom, general education teacher 4 had 22-25 students in his/her classroom, and general education teacher 5 had 19-21 students in his/her classroom.

**Questionnaire: Question Number Two**

Figure 2

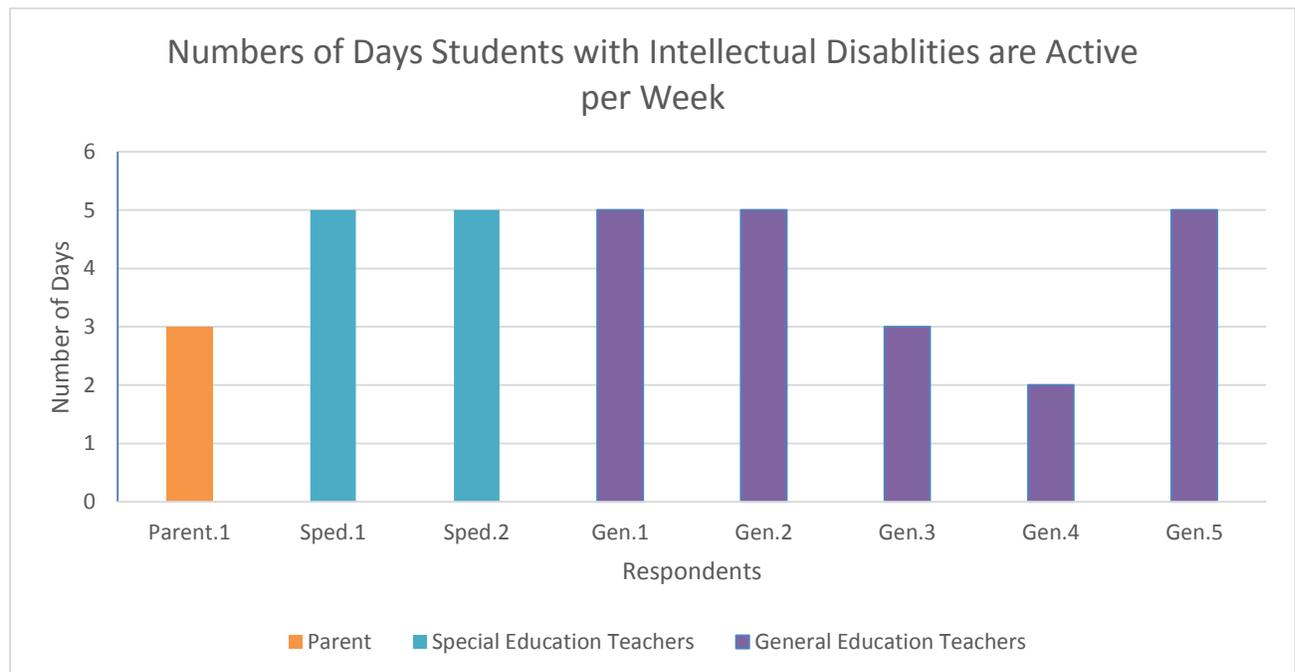


Note. 6 = represents a range respondents gave of “more than 5 students”

As seen in Figure 2 the parent respondent had one child with an intellectual disability. Special education teacher 1 had five children with intellectual disabilities on his/her caseload and special education teacher 2 had eight students with intellectual disabilities on his/her caseload. General education teacher 1 and general education teacher 5 had five students in his/her classrooms with intellectual disabilities, while general education teacher 2 had four in his/her classroom. General education teacher 3 had three students with intellectual disabilities in his/her classroom. Lastly, general education teacher 4 had the most students with intellectual disabilities in his/her classroom with more than five students. While 13 students were identified to be represented in this study, as Figure 2 shows, there are more than 13 students with intellectual disabilities in this particular school. If all three special education teachers had participated more students would have been represented throughout this study.

**Questionnaire: Question Number Three**

Figure 3

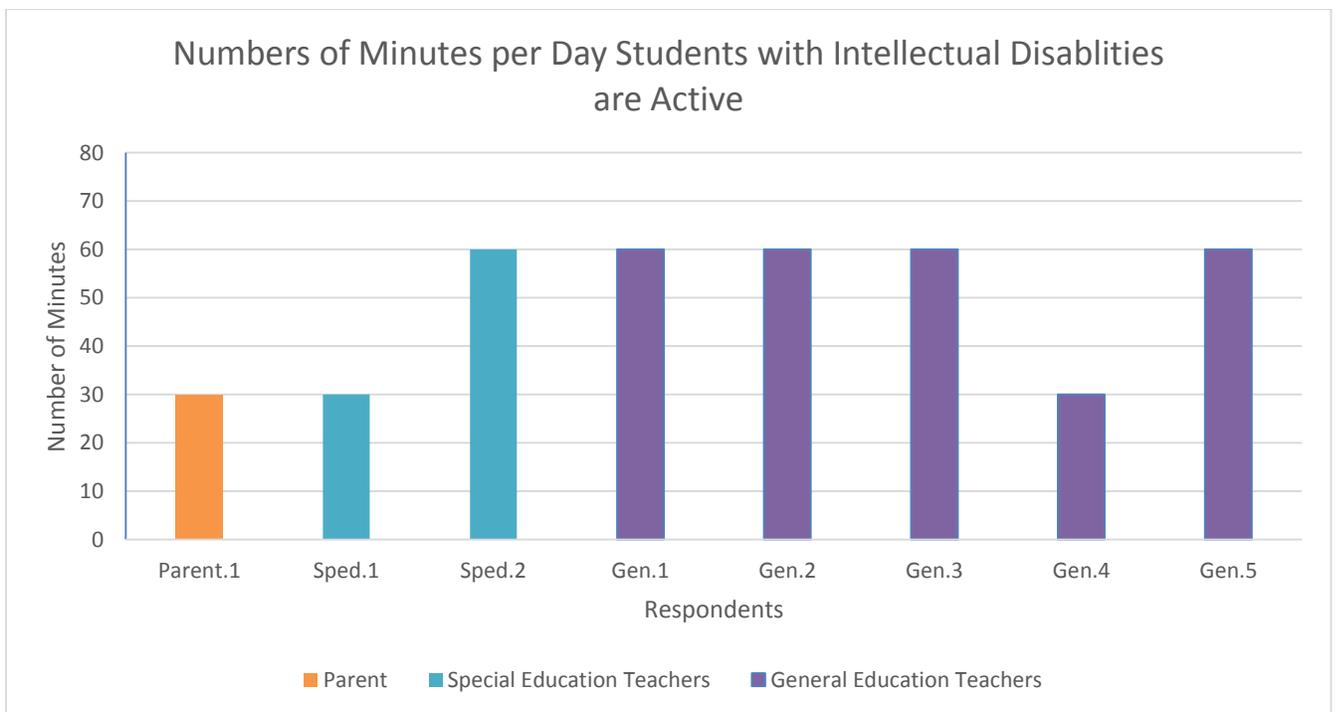


Note. 2 = represents a range respondents gave of 2-3 days; 3 = represents a range respondents gave of 3-4 days; 5 = represents 5 days

Figure 3 demonstrates that a majority of respondents believed that on average his/her students with intellectual disabilities were physically active five days of the week. Both of the special education teachers and general education teachers 1, 2, and 5 responded with five days of physical activity. The parent respondent stated that on average his/her child receives two to three days of physical activity which aligns with this student’s general education teacher (3). The general education teacher 4 stated that on average his/her students with intellectual disabilities are physically active three to four days a week.

**Questionnaire: Question Number Four**

Figure 4



Note. 30 minutes = represents range respondents provided of 0-30 minutes; 60 minutes = represents range respondents provided of 30-60 minutes; 60 minutes = represents range respondents provided of more than 60 minutes

Figure 4 demonstrates that a majority of respondents stated that on average his/her students with intellectual disabilities had 30-60 minutes worth of physical activity per day. These

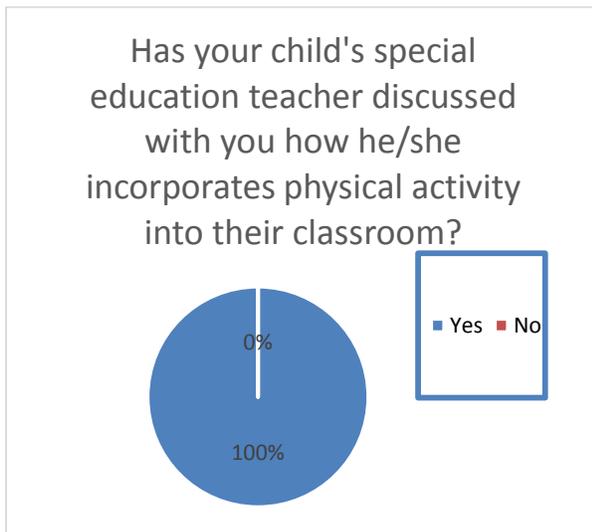
respondents included special education teacher 2 and general education teachers 1, 2, 3, and 5.

The parent respondent, special education teacher 1, and general education teacher 4 stated that his/her child/students had 0-30 minutes worth of physical activity per day.

### Questionnaire: Question Number Five

Figure 5.1

#### *Parent.1 Question Five*



The fifth question, shown in Figure 5.1, in the descriptive questionnaire asked the parent participant if his/her child's special education teacher had discussed with them how he/she incorporates physical activity into his/her classroom. The parent respondent was aware of how physical activity is incorporated into the special education classroom. He/she chose not to comment further.

Figure 5.2

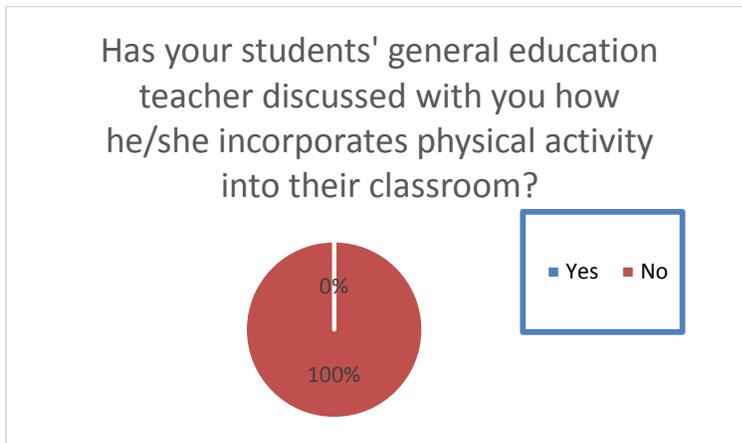
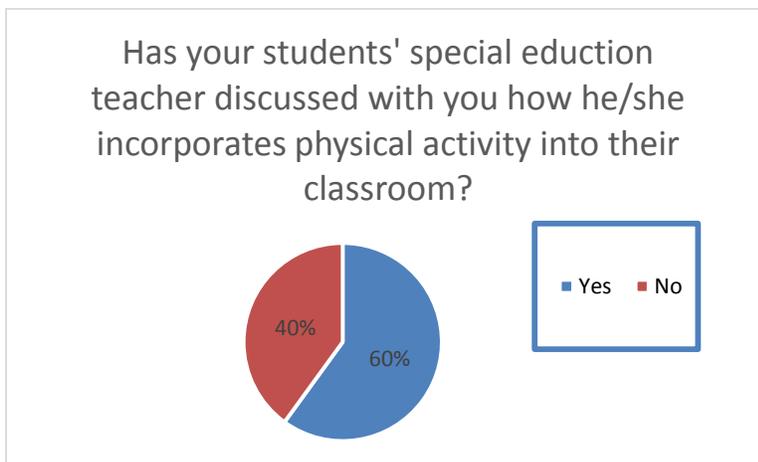
*SPED.1-SPED.2- Question Five*

Figure 5.2 displays the special education teachers' responses to the fifth question of the questionnaire. It asked whether they (special education teachers 1 and 2) were aware of how physical activity was incorporated into the general education classroom. Both special educators 1 and 2 were not aware of how physical activity was incorporated. Special education teacher 1 did comment that, "It is (physical activity) written in the regular education schedule, but no further discussion has occurred."

Figure 5.3

*GEN.1-GEN.5- Question Five*

There were three of five general education teachers who were aware of how his/her students' special education teacher incorporated physical activity into his/her classroom. There were two of five general education teachers who were not aware of how his/her special education teacher incorporated physical activity into his/her classroom. Figure 5.3 demonstrates that 60% of the general education teachers were aware of this and 40% of the general educators were not. General education teachers 1 and 4 were not aware of how physical activity was incorporated. General education teachers 2, 3, and 5 were aware of how physical activity was incorporated. There were no further comments shared by the general education teachers for this question.

### Questionnaire Number Six

Figure 6.1

*Parent.1- Question Six*

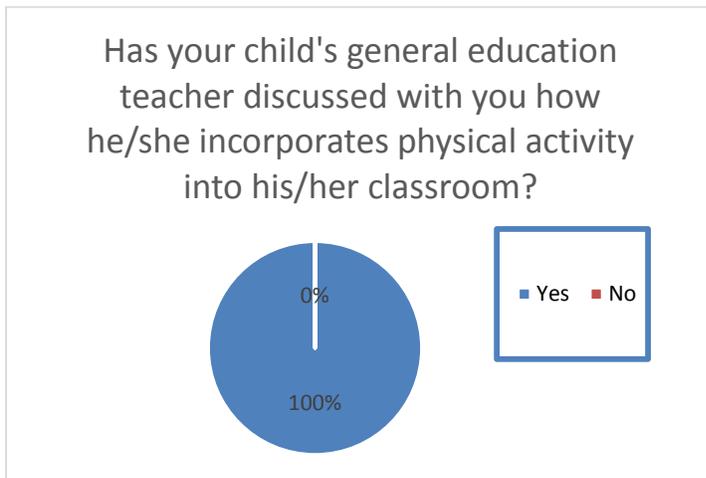
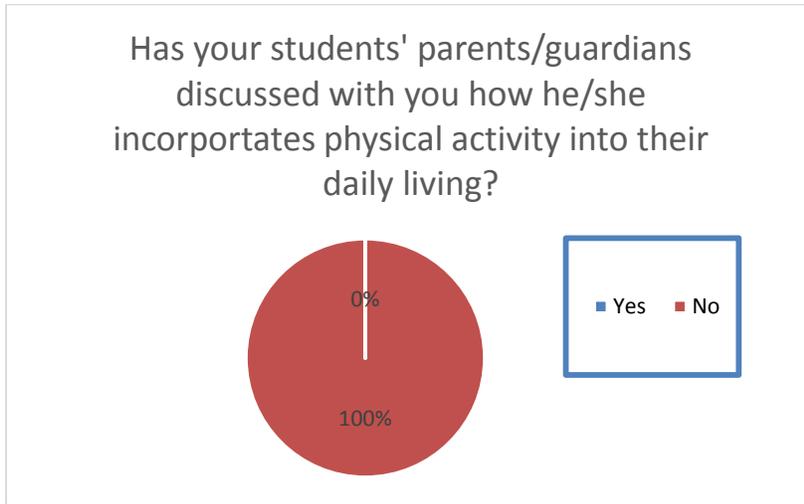


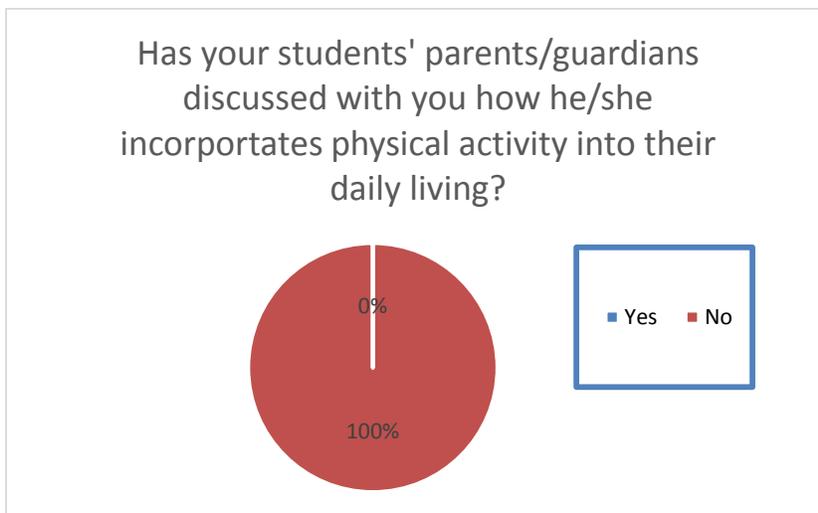
Figure 6.1 demonstrates that parent 1 is aware of how their student's general education teacher incorporates physical activity into his/her classroom. The parent chose not to make further comments on this question.

Figure 6.2

*SPED.1-SPED.2- Question Six*

It is shown in Figure 6.2 that the special education teacher 1 and 2 were not aware of how his/her students' parents incorporated physical activity into his/her daily living. Neither special education teachers chose to comment further on this question.

Figure 6.3

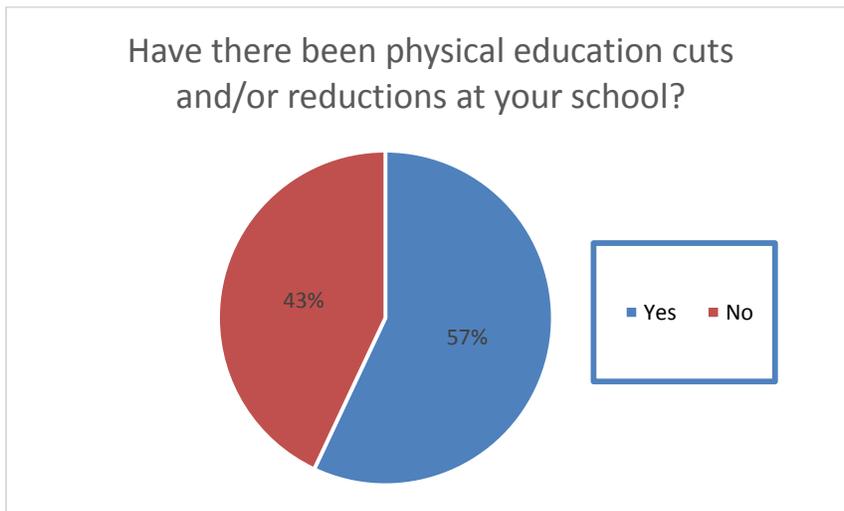
*GEN.1-GEN.5- Question Six*

Five of the five general education teachers were unaware of how physical activity was incorporated into his/her students with intellectual disabilities' daily living as shown in Figure 6.3. None of the five general education teachers chose to comment further on the question.

### Questionnaire Number Seven

Figure 7

*Parent.1, SPED.1-SPED.2, and GEN.2-GEN.5- Question Seven*



Seven of eight total respondents participated in this question. General education teacher 1 chose to not participate. Four of the seven respondents stated that there have been physical education cuts and/or reductions at the school. These included special education teacher 1, and general education teachers 3, 4, and 5. Three of the seven respondents stated that there have not been cuts and/or reductions to the physical education programs and these included parent 1, special education teacher 2, and general education teacher 2. There were several comments made by respondents in regards to this question. Special education teacher 1 stated, "There have been some formal physical education reductions, but the teachers have been required to put physical activity in their schedule to replace it." General education teachers 3 and 4 stated that physical education has been reduced from four schools days to three school days. General education

teacher 5 shared that, “The elementary school shares P.E. teachers with the junior high, so that cuts into our daily structured physical education time.”

### Questionnaire Number Eight

Figure 8.1

*Parent.1- Question Eight*

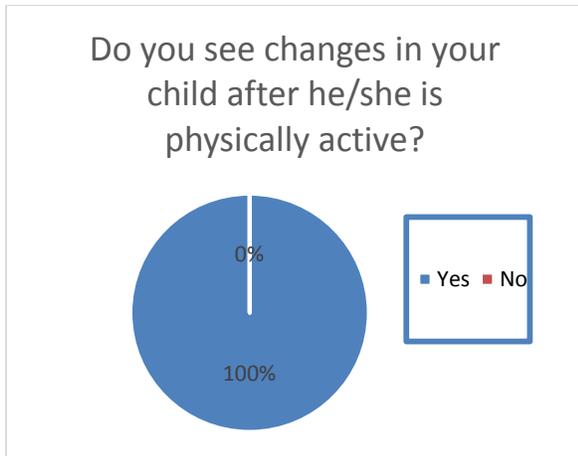
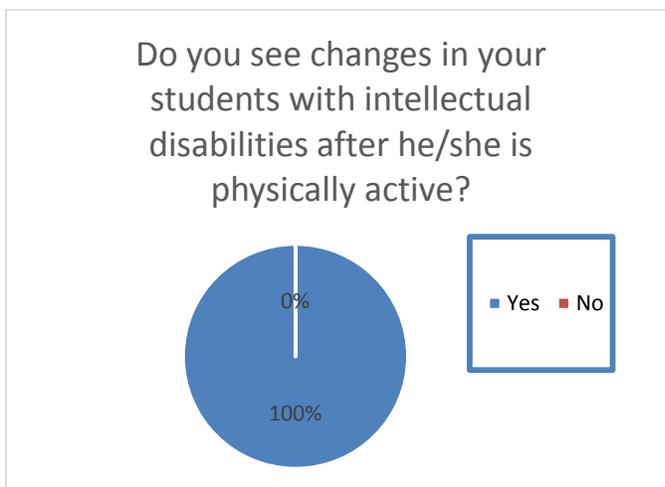


Figure 8.1 demonstrates that parent 1 stated that he/she sees changes in his/her child after the child is physically active. The parent stated that his/her child seems, “Very tired and sometimes gets very irritable, grouchy.”

Figure 8.2

*SPED.1-SPED.2- Question Eight*



Both special education teachers 1 and 2 stated that he/she sees changes in his/her students with intellectual disabilities after the students are physically active as displayed in Figure 8.2.

Special education teacher 1 commented, “Sometimes they appear to be extra “active” and need a “calm down” period when ending the physical activity.” Special education teacher 2 stated, “It can be difficult for them to calm down and focus on the next task.”

Figure 8.3

*GEN.1-GEN.5- Question Eight*

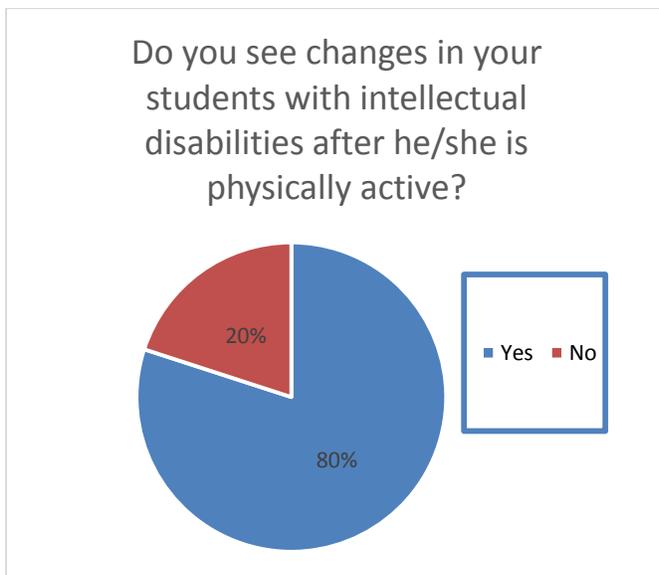
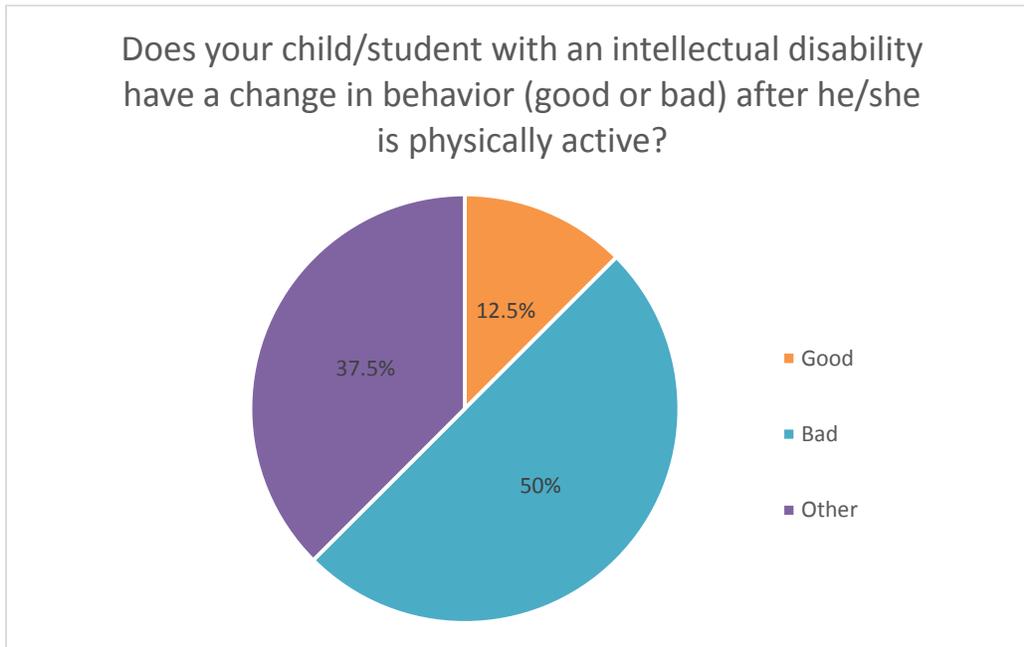


Figure 8.3 shows that four of the five general educators stated that there is a change seen in his/her students with intellectual disabilities after the students are physically active. General educator 1 did not see a change in his/her students with intellectual disabilities. General education teacher 2 commented, “Yes, happy!!” General educator 3 stated, “Yes, one of the three students gets overly stimulated and has a hard time transitioning.” General education teacher 4 said, “Yes, some of them feel tired and some more hyper.” Lastly, general education teacher 5 commented, “Yes, some of them are able to focus better after running off some of that energy; others are more keyed up and have a hard time refocusing after the physically active time.”

### Questionnaire Number Nine

Figure 9

*Parent.1, SPED.1-SPED.2, GEN.1-GEN.5- Question Nine*



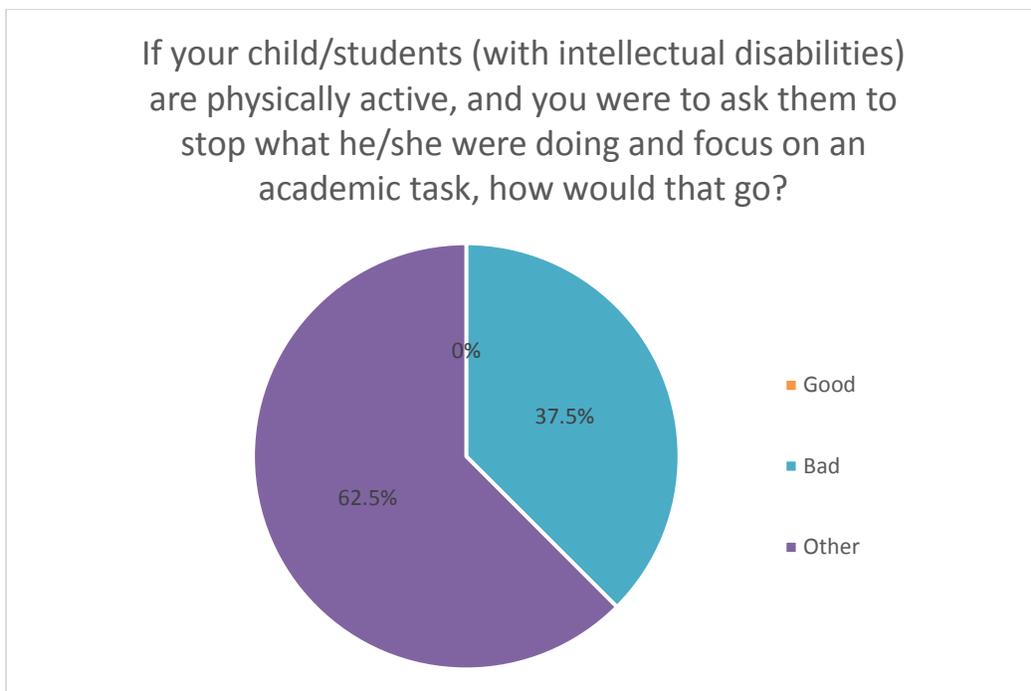
As demonstrated in Figure 9, four of the eight (50%) participants (parent, special education teachers, and general education teachers) stated that there were negative behaviors seen after his/her child or students were physically active. Parent 1 stated, “Yes, sometimes gets grouchy from getting hot from running or whatever activity, or frustrated due to the fact that he/she was unable to do the activity correctly.” Special education teacher 2 stated, “Yes, some have trouble transitioning back to class time/instruction.” General education teachers 3 and 4 stated negative behaviors have been seen. General education teacher 3 commented, “Yes, one student has had a physical outburst. This student gets overly stimulated and does not like stopping the activity.” General education teacher 4 stated, “Yes, it seems to hype some of them up. I have one student that seems tired.” General education teacher 2 was one of the eight participants that felt the behaviors were positive. That teacher stated, “Yes, generally GOOD!”

Figure 9 also has a section titled, “other,” this section was for participants that may have had a combined answer or other thoughts. Special education teacher 1 commented, “Yes, but I feel that with a “calm down” period, the physical activity has positive effects.” General education teacher 1 responded that he/she notices no changes (good or bad) after his/her students with intellectual disabilities are physically active. General education teacher 5 referred back to question number eight. That teacher stated in question eight that he/she sees a combination of behaviors. General educator 5 commented, “Yes, some of them are able to focus better after running off some of that energy; others are more keyed up and have a hard time refocusing after the physically active time.”

### Questionnaire Number Ten

Figure 10

*Parent.1, SPED.1-SPED.2, GEN.1-GEN.5- Question 10*



Question number ten in the questionnaire was interpreted whether an academic task would go well or not so well if stopping in the middle of a physical activity. Several participants

had different comments as to whether it would go well or not. There were no participants who stated that the students would be able to stop the physical activity and focus on the academic task at hand.

It can be seen in Figure 10 that five out of the eight participants (62.5%) had combinations or different comments other than “good and bad.” Special education teacher 1 stated, “They would have a hard time concentrating at first.” General education teacher 3 commented that, “One of my students would be able to focus on the academic task. The other two would not be able to focus. One would most likely ‘shut down’ completely. The other would go into a ‘fit’ and possibly act out physically.” General education teacher 5 said, “They might refocus initially, but then go right back to the unfocused behavior they were doing before; after a short time.” General educator 2 said, “Transition would be a slow process as it would take them a bit to settle down from the physical activity to focus on the task at hand.” Lastly, general educator 4 explains, “It takes some time to get them settled back down.”

Three of the eight participants (37.5%) stated that the academic task would not go well. Parent 1 expressed, “It would not go so great, most likely that academic task would not get focused on or even attempted to be looked at until ready.” Special education teacher 2 stated the academic task success would go, “not well...”. General educator 1 stated, “They would most likely be resistant to stopping.”

## **Discussion**

### **Introduction**

In this research, a qualitative descriptive questionnaire was used to observe the effects of daily physical activity on students with intellectual disabilities' academic success. The study was completed at a rural Midwest school district and the students of focus in this study included students who are identified with an intellectual disability. The age range of the students were grades Kindergarten through grade five. The special educators, general educators and a parent/guardian involved in the students' lives completed the descriptive questionnaire and explained students' level of activity and the effects of daily physical activity on students with intellectual disabilities' academic success. The participants showed that students were physically active on average five days a week and for 30-60 minutes a day, however there were some inconsistencies in this finding. Results were varied, but some demonstrated that immediately after physical activity there was a negative correlation between students with intellectual disabilities' academic success. An academic task immediately after a physical activity, according to participants, was reported to be difficult for students. The respondents indicated that students need a period of time to transition back into the classroom setting. The positive results included that it was helpful for some students to burn off excess energy and that they seemed happier when returning to the classroom setting after the physical activity.

### **Student Populations in Various Settings**

In this research it is shown that the parent participant has two children and one of his/her children has an intellectual disability. The special education teachers' caseloads varied between 14 and 20 students and the special education teachers had anywhere from five students with intellectual disabilities to more than eight. The general education classroom populations varied

from 15-18 students (in younger populations) to 22-25 students (in the older populations). The amount of students with intellectual disabilities ranged from three students to more than five students with intellectual disabilities in the general education classrooms. The caseloads and general education classroom populations appear to be large and this could contribute to lack of exercise shown in the following sections as the educators may have more requirements to teach other academic areas, and actually less overall time due to larger population of students.

### **Amount of Physical Activity**

The findings show that, on average, the students with intellectual disabilities from this school district are physically active five days a week for 30-60 minutes a day. However, some participants stated that these students are physically active for only two to three days a week for 0-30 minutes per day. Everhart et al. (2012) states that it is recommended that children have at least 60 minutes of moderate to intense physical activity nearly every day of the week. The present study displayed that these students with intellectual disabilities (even with the *most* exercise) are not physically active for the recommended amounts of time seen in research. The lack of exercise may affect the amount of academic success that these students have in the classroom. If the body is not exerted in the correct way (moderate to intense exercise) and for the correct amount of time (at least 60 minutes per day) the student's cognition will not be working at its best potential (Abadie & Brown, 2010; Hillman et al., 2008). If these students were physically active for the recommended days and time (nearly every day for at least 60 minutes) the results of this study may have varied. More success may have been evident in the classroom setting after students with intellectual disabilities were physically active according to recommended time intervals.

### **Communication about Physical Activity**

The parent participant in this research stated he/she was aware of how both the general education setting and special education setting incorporate physical activity into the classrooms. However, it is seen that the special education teachers were not aware of how physical activity was being structured into the general education curriculum. Some, but not all, general education teachers were aware of how physical activity is implemented into the special education classroom. None of the educators (general educators and special education teachers) were aware of how physical activity was incorporated into their students with intellectual disabilities' daily living at home. The small amount of communication seen between parent, special education teachers, and general education teachers showed that the respondents reporting of times of physical activity were likely in error. If one teacher used activity strategies, exercises, or brain breaks, it is unclear whether that was reported, and whether or not the other respondents knew a teacher incorporated that type of physical activity. If the communication about physical activity was this poor in this setting, perhaps it suggests that exercise was not a priority in the culture of this school. This contradicts the recommendations of amount and type of exercise to foster academic success in students in the literature.

Additionally, the use of exercise on a regular basis across settings could potentially improve the behaviors seen after physical activity and success for the students in the classrooms or at home. If there is an activity that the general education teacher finds works well to improve behavior and cognition in the classroom, this should be shared with parents and special education teachers. This should be the case for all settings within this study. The importance of physical activity for students needs to be understood across all settings. There may be teachers that have tried physical activity to break up academics and have had negative experiences; therefore, they

have not attempted them again. If there is a lack of support from the school district with physical activity educators and parents simply may not know the importance of physical activity and the positive effects it could have on the students in the classroom. There are a lot of questions that this section of data revealed.

### **Physical Education Reductions**

As seen in the present study, 50% of the respondents stated that this school has reduced physical education from four school days to three school days. One participant shared that the physical education teacher is shared between the elementary school and the junior high school. This has affected the students' structured physical education time. Chomitz et al. (2009) states that physical education is vital toward student's academic success and with the physical education reductions that are shown in this Midwest school district there have been negative results of this. Both special education teachers and general education teachers shared that physical activity has had to be written into the general educational curriculum. However, general education teachers may feel high amounts of pressure to deliver the math and English curriculum (Abadie & Brown, 2010) in comparison to the physical activity curriculum. This pressure from other academic areas may lead to reduced amounts of time focused on physical activity in the classroom curriculum. It has been found in various studies that higher amounts of physical activity on a regular basis helps to build neural connections in all students and this assists students to be more successful in the classroom (Abadie & Brown, 2010; Cannella-Malone et al., 2011; Chomitz et al., 2009; Everhart et al., 2012; Hillman et al., 2008; Nicholson et al., 2010; Pitetti et al., 2009). The reductions in physical education and smaller amounts of physical activity seen in these findings may affect the connections seen between physical activity and academic success of students with intellectual disabilities. It is unclear that physical education is

an important component in students with intellectual disabilities' curriculum in the district of this study.

### **Changes and Behavior Seen after Physical Activity**

Other findings show that the majority of participants (seven of the eight) see general changes in their students with intellectual disabilities after they are physically active. Some negative comments were that students were tired, irritable, grouchy, hyper, overly stimulated, and difficult to calm down. The positive comments made were that the students were happy after physical activity and that some of them could focus better after working off some of the excess energy the student may have had. It appeared overall that there were more negative aspects seen immediately following physical activity in this study's setting than positive for the students with intellectual disabilities.

Participants were then asked to share what changes specifically were seen in behavior of their students with intellectual disabilities after they were physically active. Some of the negative comments included that students were, grouchy, frustrated, and difficult to transition back to classroom setting, overly stimulated, have had physical outbursts, hyper, and tired. One participant stated that the transition back to the classroom was difficult and students may be resistant to stopping the activity.

A general education teacher stated that the students' behaviors were "generally good!". Some respondents shared mixed comments on the behaviors that are seen in their students. One stated that if there was a "calm down" period after the physical activity that the physical activity had positive effects. A general education teacher had a combination of results from his/her students of positive and negative results in behavior from the students after physical activity.

Finally, there was one respondent who has not seen any behavioral changes in his/her students with intellectual disabilities after physical activity.

This demonstrates that immediately after physical activity there were mixed outcomes for these students with intellectual disabilities. One of the educators has developed a way to help his/her students to transition back to the academic setting by giving them a period of time to calm down. It may be beneficial for parents and educators to learn strategies of how to transition more successfully from a physical activity to the classroom setting. This may include a routine of exercises in which all students are aware that the physical activity time is coming to an end. A phase of slow down activities placed at the end of exercise may help students who become overly stimulated to calm themselves down more effectively. Also, a “warning” system put in place may also be helpful for students with intellectual disabilities to prepare themselves to transition back to a classroom setting. These problems could be contributed to the amount of time that the students were physically active in a day and that they were not active for enough time. The exercise that those students were receiving in physical education could also not be the correct exercises to improve behavior in the classroom. From this information it also appears that a transition period between physical activity and an academic task may allow students to calm down, cool off, and refocus themselves back into the classroom.

### **Academic Success in the Classroom**

The results in regards to academic success in relation to physical activity showed that educators and the parent participant believed that academic tasks directly following physical activity can be difficult for the students. The majority of participants stated that it takes time for the students to settle back down and focus again. The transition period to calm down appears to take the students quite a bit of time, as a general educator states, “Transition would be a slow

process as it would take them a bit to settle down from the physical activity to focus on the task at hand.” What is difficult to distinguish from this study, is whether physical activity is *not* helpful toward academic success in the classroom, or simply that the students are not receiving *enough* physical activity at this particular school or at home. Hillman et al. (2008) states that finding the most effective exercises and the most effective length of time to exercise for cognition has yet to be found. If school districts can be made aware of the best combination of time to exercise and type of exercise this could help all students in the classroom. The results from the present study show that immediately following physical activity are generally negative behaviors.

### **Future Research**

More research needs to be done in the area of students with intellectual disabilities and how physical activity affects them in the classroom. Students should be more directly examined in the future to see whether positive effects are seen later after physical activity. The present study shows results immediately after physical activity. Research investigating effects of physical activity on behavior and academics 30 minutes, 60 minutes, or even 90 minutes after physical activity would be beneficial. Immediate behaviors seen may vary from behaviors seen after a period of time after physical activity. It is also important to understand that in academic research that all students will pose variable results. There are no students that are truly the same and therefore, researching influences directly on students and their academic success is much more complicated.

### **Conclusion**

The purpose of conducting this study was to understand how daily physical activity affects students with intellectual disabilities and their academic performance. The literature

review that was completed in regards to this research showed a positive correlation between physical activity and academic success. However, in conclusion to this present study conducted in a rural Midwest school district, there were mixed results found in students with intellectual disabilities after they were physically active with more negative perceptions from the teachers/parent than positive. Students had difficulty refocusing on academic tasks, they had appeared tired, and had been overly stimulated from the physical activity. This study contributes to the literature by showing that there may need to be more exercise, communication about the priority of the exercise and education about the benefits of exercise to students with intellectual disabilities in at least this Midwest setting. But if this setting is an example of others in the region or even nationally, then more work in this field is clearly needed. Future research should be completed on finding the optimal combination of the type of exercise and length of exercise time to help students with intellectual disabilities improve academically and behaviorally in the classroom. Research must look into the behavioral and academics changes in students after longer periods of time after physical activity has been completed.

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### **Appendix A Participant Invitation**

I am inviting you to participate in the research study for my Master of Science in Cross Categorical Special Education thesis at the University of Wisconsin-Superior. This study is designed to investigate the effects of daily physical activity on students with intellectual disabilities academic performance.

You were selected to participate in this study because of involvement in this student with an intellectual disability's life. Accompanying this invitation is an overview of the study and an informed consent form.

If after reading the study overview, you are willing and available to participate in this study, please return the informed consent form to the special services office by this deadline\_\_\_\_\_. Directions for doing so are included on both.

I appreciate your time and thank you for your consideration. If you have any questions, concerns, or comments, please feel free to contact me.

**Katherine Rardin**

**University Email: KMUELL13@uwsuper.edu**

**Address: 612 West Polk Avenue #2, Charleston, IL 61920**

**My Thesis Advisor:**

**Dr. Maryjane Burdge**

**University Email: mburdge@uwsuper.edu**

**If you should have any questions or concerns about your treatment as a subject in this study or the study itself, please call or write:**

**Dr. Eleni Pinnow**

**Chair, Institutional Review Board for Human Subjects**

**715-394-8312**

**epinnow@uwsuper.edu**

## Appendix B Study Overview for Participant Consideration

This study uses a qualitative descriptive survey to gather results. As you consider participating in this study, it may be helpful to know what will happen and how long it is scheduled to take.

### Step One:

At this time of the study, administration from one Midwest public elementary school will be asked to volunteer to be a part of this study.

### Step Two:

If permission is gained from the district administration the special education teachers and general education teachers with students who have intellectual disabilities within the school district will be delivered a participant invitation, study overview, and informed consent form.

### Step Three:

The special educators will *confidentially* distribute these documents to the parents of students with intellectual disabilities on their case load as well. The school district and each survey will be kept confidential. If there are any questions or concerns in regards to the consent form they may be directed to Dr. Eleni Pinnow at the University of Wisconsin- Superior.

### Step Four:

Once participants have completed the informed consent form they will submit them to a confidential envelope within the special services office in the school district.

### Step Five:

Once consent is received to participate in the research, teachers and parents will be emailed a link or sent a hard copy of the questionnaire (whatever they may choose). The website (*Survey Monkey*) will not ask participants for their names or information to remain confidential. The participant will fill out the survey. This should take anywhere from 20-30 minutes to complete.

### Step Six:

When the questionnaires are submitted or returned, the data will be divided into categories of special education teachers, general education teachers, and parents of student's with intellectual disabilities. The data will be investigated and analyzed for patterns and information. Confidentiality will continue throughout data collection.

Step Seven:

Once the patterns are calculated and compiled the results will be shared with the University of Wisconsin- Superior.

**If you should have any questions or concerns about your treatment as a subject in this study or the study itself, please call or write:**

**Dr. Eleni Pinnow  
Chair, Institutional Review Board  
715-394-8312  
epinnow@uwsuper.edu**

### **Appendix C Informed Consent**

You are being asked to complete a questionnaire to help researchers better understand how daily physical activity effect the academic performance of students with intellectual disabilities. Many of the questions ask about your experiences with educating and parenting these students and how physical activity effects their academics.

Please be as honest with us as possible and answer all questions to the best of your knowledge. You should be able to complete the questionnaire in about 15-20 minutes. The investigator understands that the time taken to complete this questionnaire could cause inconvenience. Please complete the questionnaire by \_\_\_\_\_.

Once the study is completed, a summary of the results will be made available through the Educational Leadership Department at the University of Wisconsin-Superior

Your participation in this questionnaire is entirely voluntary and confidential. By completing this questionnaire you are giving your consent to be involved in the research. If at any point you decide that you do not want to complete the questionnaire, please return it and inform the investigator.

Thank you for your cooperation and the time that you have taken to complete this questionnaire.

This research project has been approved by the UW-Superior Institutional Review Board for the Protection of Human Subjects, protocol # 1007

**If you should have any questions or concerns about your treatment as a subject in this study or the study itself, please call or write:**

**Dr. Eleni Pinnow**  
**Chair, Institutional Review Board**  
**715-394-8312**  
**epinnow@uwsuper.edu**

Signature: \_\_\_\_\_

Please circle one:

I would like to complete the survey:                    **Online**                    **Hard copy**

**\*If online survey is chosen please include your email address: \_\_\_\_\_\***

I am a:    **Special Education Teacher**    **General Education Teacher**    **Parent/Guardian**

Again, **please do not put your name anywhere on the survey.**

Thank you,  
 Katherine N. Rardin

### Appendix D Parent Survey Questionnaire

1. How many children do you have?
2. How many children with Intellectual Disabilities do you have?
3. On average how many days a week is your child with intellectual disabilities physically active?
4. On average how many minutes per day is your child with intellectual disabilities physically active?
5. Has your child's special education teacher discussed with you how they incorporate physical activity in their classroom?
6. Has your child's general education teacher discussed with you how they incorporate physical activity in their classroom?
7. If your child has been at their elementary school for more than two years, share if there have been cuts in their physical education programs.
8. Do you notice any changes in your child after they are physically active?
9. Does your child have a change in behavior (good or bad) after they are physically active?
10. If your child is physically active, and then you ask them to stop what they are doing, and focus on an academic task how would that go?

**If you should have any questions or concerns about your treatment as a subject in this study or the study itself, please call or write:**

**Dr. Eleni Pinnow  
715-394-8312  
epinnow@uwsuper.edu**

### **Appendix E Special Educator Survey Questionnaire**

1. How many children do you have on your case load?
2. How many children with intellectual disabilities do you have?
3. On average, how many days a week at school are your students with intellectual disabilities physically active?
4. On average, how many minutes at school per day are your students with intellectual disabilities physically active?
5. Has your student's general education teacher discussed with you how they incorporate physical activity in their classroom?
6. Has your student's parents discussed with you how they incorporate physical activity in their daily living?
7. Share if there have been physical education reductions and/or cuts at your school.
8. Do you notice any changes in your students with intellectual disabilities after they are physically active?
9. Do your students have a change in behavior (good or bad) after they are physically active?
10. If your students are physically active, and then you ask them to stop what they are doing, and focus on an academic task how would that go?

**If you should have any questions or concerns about your treatment as a subject in this study or the study itself, please call or write:**

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**Appendix F General Educator Survey Questionnaire**

1. How many children do you have in your classroom?
2. How many children with intellectual disabilities do you have in your classroom?
3. On average how many days a week at school are your student's with intellectual disabilities physically active?
4. On average how many minutes at school per day are your students with intellectual disabilities physically active?
5. Has your student's special education teacher discussed with you how they incorporate physical activity in their classroom?
6. Has your student's parents discussed with you how they incorporate physical activity in their daily living?
7. Share if there have been physical education reductions and/or cuts at your school.
8. Do you notice any changes in your students after they are physically active?
9. Do your students with intellectual disabilities have a change in behavior (good or bad) after they are physically active?
10. If your students are physically active, and then you ask them to stop what they are doing, and focus on an academic task how would that go?

**If you should have any questions or concerns about your treatment as a subject in this study or the study itself, please call or write:**

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