

THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND ACADEMIC
ACHIEVEMENT IN MIDDLE SCHOOL STUDENTS

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Abstract

The Relationship between Physical Activity and Academic Achievement in Middle School Students

Middle School presents a unique set of challenges for a sixth grade student. What happens to these children when they are faced with multiple changes and limited physical activity? How does a lack of physical activity affect academic performance and behavior in sixth grade students? The following study took place in a middle school where students are required to take one trimester (thirteen weeks) of Spanish and two trimesters of P.E. Through gathering data on grades, behavioral referrals, surveys and interviews with students and teachers, this study attempts to show that there is a direct correlation between weak academic performance, disruptive behavior and lack of physical activity. In my analysis, I compared grades and behavioral reports between the trimesters the sample group had P.E. and the trimester they had Spanish. Data showed that indeed, the grades did decline and behavioral referrals did rise during the trimester the students were enrolled in Spanish rather than P.E., and surprisingly continued to deteriorate throughout the end of the school year. Although the research raised more questions than it answered, it does imply that lack of physical activity does have a negative influence on students' grades and behavior.

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Introduction

As children move from elementary school to middle school, they are faced with numerous changes: six different classes, multiple teachers, locker combinations, eighth graders who are at least a foot taller than they are, and the worst change, no recess! The transition from elementary school to middle school presents countless challenges, and with the new stresses, compounded with growth spurts and hormonal changes, middle school students need a physical outlet for all of their energy. However, because of the pressure to raise the Measurement of Student Progress (MSP) scores, many schools have reduced their physical fitness programs. At an International Baccalaureate (IB) middle school, in addition to fulfilling state requirements, students are required to study eight subject areas for each year of middle school: Language A (the language of the school), Language B (the second language taught), Humanities, Technology, Sciences, Mathematics, Arts and Physical Education.

In order to fit the required subjects into a six period schedule, this I.B. middle school has designed a schedule in which each student has Spanish for one trimester a year and Physical Education for the remaining two trimesters. The ideal situation would be for all students to have “concurrency of learning” (*The M.Y.P.: From Principles to Practice*, 2010) which is defined as continuous learning throughout the school year in both Language B (Spanish) and in P.E. For ease of scheduling, the trimester solution has been the accepted choice for delivering the curriculum. However, what is the cost? What are the implications of not having P.E. for three months of the school year? Even Michelle Obama commented, "One in three children today is obese or overweight" (letsmove.gov, 2011, para. 1). Are we helping to create obese children? What happens to

students' learning when they are not physically active? Is there a detrimental effect on behavior during the trimester where students do not take P.E.?

I suggest that students need to be physically active in order to learn best and behave appropriately in class. Studying Spanish for one trimester and P.E. for two trimesters could have a detrimental effect on the retention of Spanish, their behaviors, and the overall fitness of students. Moreover, with the many stressful factors that affect a smooth transition to middle school, children need the opportunity for physical play. Other scheduling options could be considered that would fulfill the requirements of the I.B. Middle Years Programme, as well as deliver a concurrent Spanish and Physical Education program at the I.B. middle school in Washington.

Literature Review

In this project I seek to better understand the relationship between physical activity and academic achievement of 6th grade students as they transition from elementary school to middle school. In my literature review, I will consider research concerning several factors that influence academic achievement for middle school students: the transition from fifth grade to middle school, academic achievement and physical fitness, pertinent brain research and academic achievement and students with ADHD. I will also consider the recommendations made for these students.

Transitions to Middle School

Research shows that the transition between fifth and sixth grade holds many challenges for students. In "*Movin' up to the Middle*", Wormeli (2011) acknowledges the difficult transition between elementary and middle school for all students, and gives recommendations for educators of this age group. Because the middle school experience has direct correlation with graduation rates, particularly in high poverty environments,

schools should develop an action plan to help students transition (Wormeli, 2011). Wormeli (p. 49) lists five mindsets to help with the transition experience. First, Wormeli suggests the schools should find ways of showing students living life as a middle schooler. For example, have 5th graders shadow a middle school student for a day, show a video of a “day in the life” of a middle school student and use strategies useful for ELL students. Second, schools should empathize with the students. The staff needs to remember what it was like, and treat the children as foreigners entering a new land with little knowledge of the culture. Third, educators should understand the characteristics of the age group. Fourth, schools should focus on the positive character traits of the students. They might include students in the decision making process of the classroom, and help them learn self-efficacy. For example, students could develop their own list of classroom management norms. Finally, teachers should build hope in the students. Wormeli warns that teachers often offer warnings rather than hope to students. For example, Wormeli states that behavior consequences need to have a time limit so that students can have a fresh start, and the consequences should not affect grades (2011, pp. 49-52). These recommendations can help students make a smooth transition to middle school, and help them be better equipped for academic success.

Research pertaining to the transition from elementary school to middle school often shows the difficulties that students experience (Juvonen, 2004). However, when that transition is complicated by such an event as divorce of the child’s parents, the transition becomes that much more difficult. Hines (2007) observes that 60% of all children will experience divorce in their family before they reach age 18, and 88% of these children experience both academic and social difficulties as they transition from

elementary to middle school and from middle school to high school. Hines' (2007) study of the academic and social transition of 196 middle school aged boys and girls of divorced parents also sought to determine if gender can affect the transitional experience. In the findings, girls were more academically adjusted than their male peers in 9 of 15 items surveyed, and more socially adjusted in 13 of 21 items surveyed. However, in questions dealing with forming relationships, girls scored lower than boys. The boys seemed to have more difficulty with the adjustment to larger crowded schools, peer pressure and following rules (Hines, 2007, pp. 7-8). Furthermore, the boys also showed decreased success than did girls in language and math. Hines proposed that schools should develop an action plan for girls to help them make friends and for boys to help them with appropriate behavior. Finally, Hines (2007, pp. 11-12) found that children of intact families adjusted more quickly to the transition than did those from divorced families.

Academic Achievement and Physical Fitness

One aspect of elementary school that threatens to be lost in the transition to middle school is physical education classes. Although Murray and Tennenbaum (2010) report that 60% of youth between the age of 9 and 13 have no physical activity outside of school, physical fitness programs have long been associated with better physical health, improved mental health and higher academic achievement. In an article in "*Communiqué*", a journal directed towards school psychologists, authors Fedewa and Clark (2010) seek to highlight the importance of physical activity for the general well-being of students and offer information to encourage school psychologists to become advocates for school based physical activity. Even though there are inconsistent results

in studies of physical fitness as it relates to academic achievement due to the vast differences in the intensity of activity studied, results still seem to show that there is a positive correlation between physical activity and academic achievement. Research seems to show that the greater the intensity of the activity, the greater the cognitive gains (Fedewa & Clark, 2010).

In a research article titled, "*Children's Physical Fitness and Academic Performance*," authors Wittberg, Northrup and Cottrel (2009) found that physical activity has a positive influence on cognitive performance. They compared the standardized test scores of fifth graders in West Virginia for reading/language arts, mathematics, science, and social studies with the students' fitness scores on "FITNESSGRAM" tests (2009, p. 31). FITNESSGRAM is a series of fitness tests used by the West Virginia schools that measures six areas of fitness: "aerobic activity, abdominal strength and endurance, body composition, upper body strength and endurance, flexibility and trunk extensor strength and flexibility" (Wittberg et al., 2009, p. 31). Students score either 1 in the "Healthy Fitness Zone" or 0 "Needs Improvement". The results showed that students who scored in the HFZ in all areas except the trunk strength category scored higher on every academic achievement test than those who scored in the need improvement zone. They found that their results "provide further support that a fitter child is more likely to succeed in the academic environment" (Wittberg et al., 2009, p. 33).

In Blom, Alvarez, Zhang and Kolbo's (2011) study of 2992 students in grades 3 through 8 in Mississippi public schools, results indicate yet another example of a positive correlation between physical activity and standardized math and language scores, and a negative correlation regarding absences. Results show that students who were more fit

were less likely to miss school and do poorly on standardized tests (Blom et al., 2011). In yet another study that attempts to compare fitness scores with academic achievement, researchers find that there is a correlation between physical fitness and math achievement, but not with English achievement scores (Chomitz, Slining, McGowan, Mitchell, Dawson & Hacker, 2008). Although results vary, and researchers admit that there are often many variables such as socioeconomic status, diet, gender and home life, academic achievement and physical fitness still prove to be linked.

Brain Research

Looking at how the brain functions may also shed some light on the connection between physical activity and learning. Exercise increases blood flow across tissues in the body. Specifically in the brain, exercise causes increased blood volume to the dentate gyrus: a part of the hippocampus, which is an area in the brain involved in memory formation (Medina, 2008, pp. 21-22). Increased blood flow also increases oxygen to the brain, and research shows that higher concentrations of oxygen to the brain enhance cognitive performance (Sousa, 2011, p. 23). Along with oxygen, exercise also releases neurotransmitters such as endorphins, glucose, serotonin, noradrenalin and dopamine, which reduce stress, cause mental alertness and stimulate cognition (Jensen and Dabney, 2000, p. 131). The cerebellum also plays a part in connecting physical activity and learning. Long understood as the area of the brain that coordinates the performance of learned motor skills such as riding a bike, recent research shows that the cerebellum also plays an important role in attention, long term memory, spatial perception and impulse control (Sousa, 2011, p. 237). Clearly, movement is linked to learning and memory.

Research also indicates that boys and girls brains develop differently (Bonomo, 2010). Bonomo (2010) states that boys' and girls' brains develop in a different order, time and rate in the areas that affect language, spatial memory and motor coordination. The areas involved with language and fine motor skills develop about six years earlier in girls than in boys, whereas the areas involved in targeting and spatial memory develop about four years earlier in boys than in girls. Bonomo explains that in the classroom this is manifested in that girls can transition better, have less attention span issues, make fewer impulsive decisions (because of higher serotonin levels), and are better at sitting still, listening, reading and writing. Conversely, boys who have the largest area of the brain devoted to spatial mechanical functioning, are more impulsive, less likely to sit and talk and get in more trouble for not listening, moving around and having incomplete assignments. Bonomo (2010) concludes her article with this warning, "Keep a close eye on boys, but let them play. Without a physical outlet, their aggressiveness will show up elsewhere inappropriately" (p.263). Not only does the results of brain research show that movement and learning are connected, but very possibly we are doing a disservice to our boys by not letting them move.

Academic Achievement and ADHD

Attention Deficit Hyperactive Disorder (ADHD) presents another factor that further complicates the transition for middle school students. In their study, Daley and Birchwood (2010) find that students diagnosed with ADHD ranging from preschool to university graduates are more likely to use remedial services, be in special education classes, be suspended, underachieve academically, perform poorly in reading, math and writing skills on standardized tests, and have an increased likelihood to repeat grades.

Daley and Birchwood (2010) find that among the adults diagnosed with ADHD as children, 12% completed a bachelor of arts degree compared to 50% of the control group, and 1% completed a postgraduate degree compared to 8% of the control group.

Moreover, Fedewa and Clark (2010) suggest that physical activity may be an effective intervention for children with ADHD. Their preliminary data shows that physical activity can help students stay on task, pay attention for longer periods of time, and complete work assignments. Teachers also report that students are more focused and attentive after physical activity. Fedewa and Clark (2010) find that physical activity helps maintain attentiveness and calmness, and suggest that it may improve executive functioning [planning] for children with ADHD.

In Langberg's (2008) research at Multimodal Treatment Center involving children with ADHD transitioning to middle school, research showed that the alteration of a child's environment (moving from elementary school to middle school) might exacerbate ADHD symptoms. Langberg finds that in middle school, cognitive demands are increased and students are required to function with more independence at school and at home. Langberg's (2008) study involved 258 students categorized into four groups: students with ADHD on medication, students with ADHD seeing a psychologist, students with ADHD on medication and seeing a psychologist, and students without ADHD. Langberg assessed the subjects at 14 months, 24 months, 36 months and 6 years past the middle school transition focusing on the three traditional symptoms of ADHD: inattention, hyperactivity and impulsivity. The results showed that although there is a decline of symptoms with age, there is an interruption of the decline during the transition from elementary to middle school for those students with ADHD. Results also suggested

that although medication improves the symptoms, it does not improve study skills, organizational skills or time management skills that are critical to the success of the student (2008, p. 660). In contrast, there were no changes in the behavior of the students in the control group (Langberg, 2008, pp. 652-660).

In summary, research shows that the transition between fifth and sixth grade holds many challenges for students. Moreover, there are factors that can complicate the transition such as divorce and ADHD. Both divorce and ADHD can have a detrimental effect on both academic and social development for boys and girls in the middle years (Hines, 2007). Physical activity has been proven to boost the immune system and create overall more healthy youth, and in some cases has proven to help students with ADHD in some areas specifically if the children have academic tasks right after the activity (Fedewa & Clark, 2010).

Research question

Research shows that there are many factors that complicate the transition from elementary school to middle school, and that physical activity offers many advantages for students. The question at the heart of the project is: How does lack of physical activity influence students' academic achievement and behavior? A secondary question is: What are the repercussions for students with ADHD?

Methodology

Method and Rationale

I used both the quantitative and qualitative approach to study this question. In a quantitative study, the researcher looks at measurable data that can be generalized (Hendricks, 2009). The correlational quantitative approach was appropriate because I collected data about grades and occurrences of reported behavior problems between grading periods, and analyzed what happened to this data when sixth grade students had a P.E. class and when they did not. In a qualitative study, the researcher seeks to understand and interpret phenomena in a natural setting (Hendricks, 2009). I employed the qualitative approach for analyzing the perceptions and experiences of students and teachers throughout the school year. I looked for themes to analyze the data.

Sample

I studied a middle school in the Pacific Northwest where students have physical fitness for two trimesters and Spanish for one trimester for their first period class. Specifically, I studied one class of sixth grade students for a total of 19 students which included two students diagnosed with ADHD. The class consists of nine girls and ten boys. Although the school resides in a rather affluent area of Western Washington, the population includes many recent immigrants and first generation students. Seven of the nineteen students have recently graduated from the transitional bilingual program in our school, and nine students speak a language other than English in the home. I recorded data regarding their grades and occurrences of inappropriate behavior over the course of the school year. I also conducted surveys and interviews with the students diagnosed with ADHD and the teachers of their second period class for their perceptions of their academic performance and behavior during Trimester 2 when they had Spanish class and Trimester 3 when they had P.E.

Instrumentation

The data collected includes end of trimester grades, behavior referrals, surveys given to the students and their teachers, and interviews with the students and their teachers. I compared trimester grade point averages (GPA) and behavior referrals between grading periods. My sample class had P.E. during Trimester 1, then Spanish Trimester 2, and then P.E. again for Trimester 3. I also compared trimester GPAs and behavior referrals between grading periods. I surveyed and interviewed two students diagnosed with ADHD at the end of the school year seeking their impression of their work load, ability to organize six classes, ability to concentrate and their frustration level. The survey for the students consisted of a series of questions based on the students' perceived engagement and attitudes towards learning. I also interviewed the two students asking them if they had any other comments about their general performance in their classes.

In addition to interviewing the students, I surveyed these two students' second period teachers asking them their impressions of their students' attentiveness, work completion, organization and behavior. I asked the teachers if there was any marked difference in their performance right after they had exercised during Trimester 3. I gave their teachers a rubric with several categories in which to rate the students with ADHD. They rated the students in the areas of organization, work completion, attentiveness, and appropriate behavior in your class. I then asked the teachers for any general comments they might have regarding the students' performance and classroom behavior.

Analysis and Validity

I analyzed my data by looking for similarities and differences between the students' GPAs, number of referrals and patterns of kinds of referrals between the three different trimesters. I looked for similarities in data between students with ADHD and other students. I looked specifically at the data from the first grading period to the second grading period to see if there was a marked difference in the academic performance between Trimester 1 when students were in P.E. and in Trimester 2 when they were in Spanish. I compared the surveys of students and teachers and looked for a correlation between students' and teachers' attitudes, perceptions and the students' achievement.

In the role of the researcher, I carry the inherent bias that students perform better academically if they have opportunities for frequent physical activity, and thus perform poorly without the opportunity for physical activity. I compensated for this bias by not averaging the grades from my first period class (first period Spanish and P.E) with the grades of the students in my study, and by checking my interpretations with the students and teachers from whom I collected data. Moreover, I looked at the students' Trimester 3 grades when the students were back in P.E. in order to compensate for other factors that might influence the students' performance such as time of year, vacations, and state testing.

Data

The first section of my data is drawn from the grade reports for the three trimesters. The second section of my data is the record of behavioral referrals throughout

the school year, and the third section is drawn from the surveys and interviews of the two students with ADHD and their second period teachers.

Comparison of GPA

The first table (Table #1) shows the GPA of the 19 students in the sample class. I factored in the five classes the students had without using their grades from Spanish or P.E. I included their GPA. from all three trimesters in order to see if there was a trend throughout the year or a significant difference in their grades only when they had Spanish. These students had P.E. 1st trimester, then Spanish 2nd trimester, then P.E. again for 3rd trimester. The two students with ADHD were also in this class.

Table #1: The Average GPA of the students' classes without factoring in the grade for Spanish or P.E.

	Trimester 1 GPA	Trimester 2 GPA	Trimester 3 GPA
Student #	(In P.E.)	(In Spanish)	(In P.E.)
1	2.94	3.54	3.8
2	3.68	3.34	2.94
3	2.68	1.94	1.34
4	3.06	3.88	3.94
5	2.68	2.34	1.8
6	3.36	2.87	2.46
7	3.88	4	4
8	3.94	3.81	3.8
9	3.2	3.53	3.6
10	3.4	2.72	2.74
11	3.2	3.55	3.62
12	3.32	3.28	2.88
13	2.68	2.26	1.94
14	3.74	3.41	3.8
15	3.7	3.35	3.06

16	3.83	3.88	3.88
17	3.94	4	3.82
18	2.34	1.82	1.8
19	3.08	3	2.72

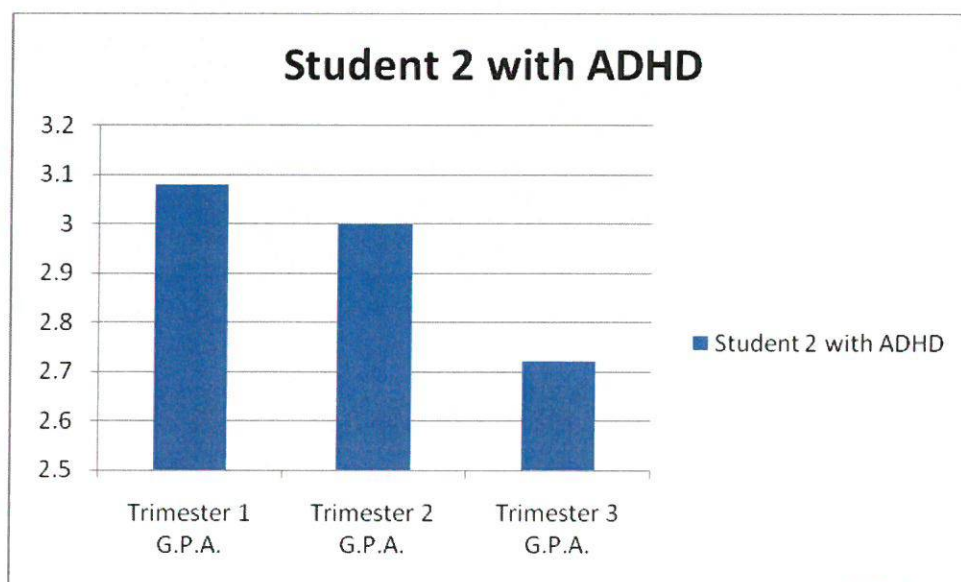
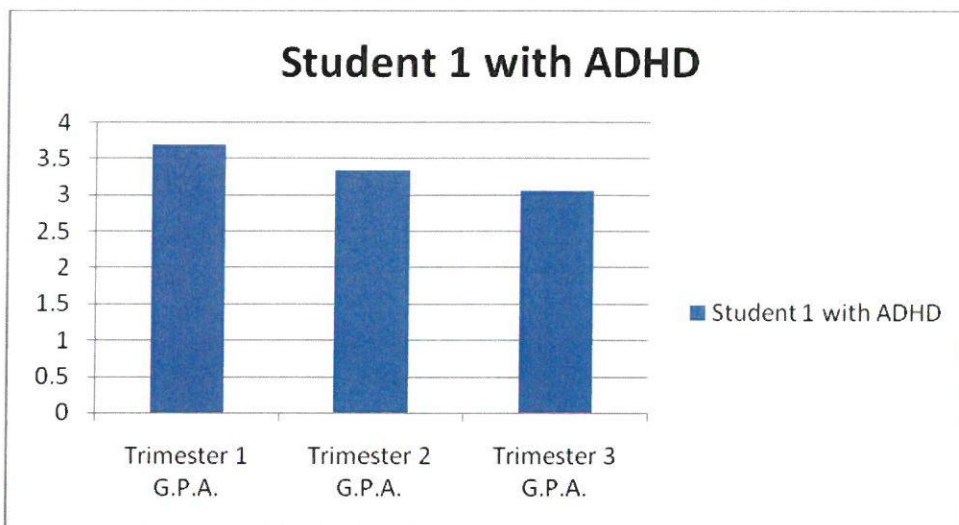
White – GPA higher during Spanish; Dark – GPA lower;

This next graph shows the average GPA of the girls, the boys and the whole class in the sample group on a 4 point scale, again, not including the grades from their P.E. classes and Spanish. There were nine girls and ten boys in the sample group. I was looking for trends of whether grades went up or down when students had Spanish.

Graph showing average GPA:



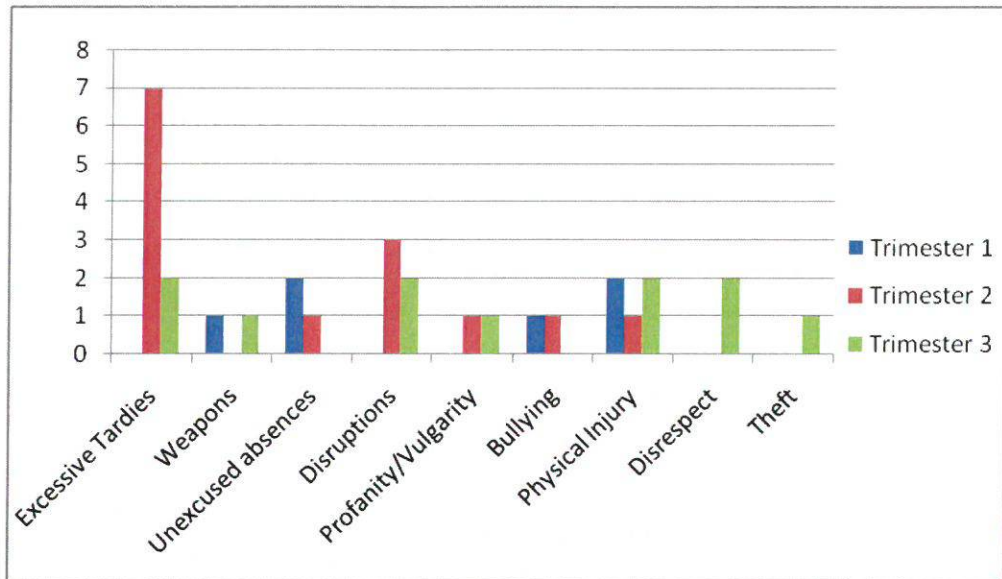
Finally, here are graphs showing the GPA of the two students with ADHD throughout the school year.



Comparison of Behavior Referrals

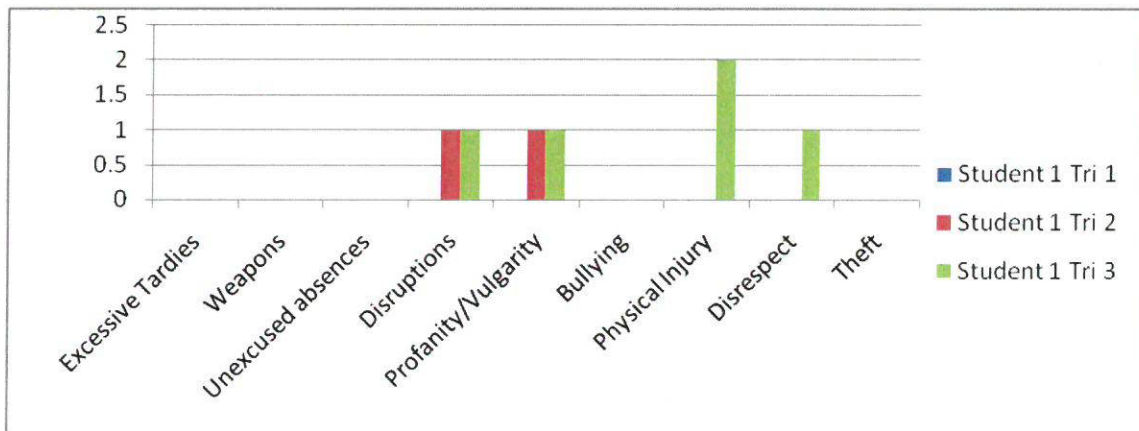
The first graph shows the number of behavioral referrals for my sample class. The number refers to the number of times a student was referred to the assistant principal for the behavior. In this data I was looking to see if there was a correlation between the class's average GPA and occurrences of referrals.

Behavioral Graph of Sample Class:



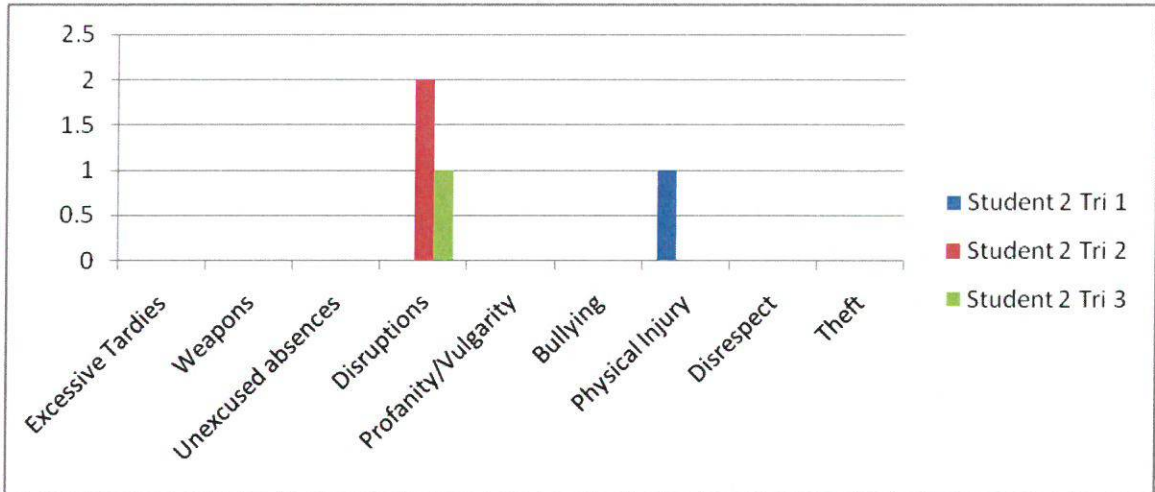
The second graph shows the number of behavioral referrals for student 1 with ADHD. In this data I was looking to see if there was a correlation between the student's average GPA and occurrences of referrals.

Behavioral Graph of Student 1 with ADHD:



The third graph shows the behavioral referrals for student 2 with ADHD. As in the graph above, in this data I was looking to see if there was a correlation between the student's average GPA and occurrences of referrals.

Behavioral Graph of Student 2 with ADHD:



Surveys and Interviews

Here are the survey responses by student 1 with ADHD and the student's second period teacher. The student was asked to rate himself in the areas listed below for Trimester 2 when he was in Spanish, and for Trimester 3 when he was in P.E. The second period teacher was also asked to rate their perception of the student in these areas with the exception of achievement. In the data, I looked to see if the perceptions of the students aligned with their performance, and also if the perceptions of the teachers aligned with the students.

The rating system for the student was as follows:

1=I need serious help with this!

2=I can do this a little.

3=I feel pretty good at this.

4= I've got this!

The rating system for the teacher's responses was as follows:

1=never; 2=sometimes; 3=often; 4= never.

Here are the responses by student 1 with ADHD and the student's second period teacher to the survey:

	Organization		Work completion		Paying attention		Behavior		Achievement	
	T2	T3	T2	T3	T2	T3	T2	T3	T2	T3
Respondent										
Student 1 w/ADHD	2	3	2	3	1	3	1	2	2	3
Teacher	2	3	3	4	3	3	3	3	n/a	n/a
T2=Trimester 2 - Spanish , T3=Trimester 3 - P.E.										

The following are the responses to the interview questions I asked student 1 with ADHD:

Question: Did you notice any other differences in school between Trimester 2 and Trimester 3?

Student 1 response: In Trimester 2 I was not as prepared. In P.E. you just need P.E. clothes. Also, my grades went down in Trimester 2. I had two C's. Now I only have one C. I feel like I can focus better now. You can get out all your energetic feelings.

The following are the comments made by student 1's teacher:

Teacher of student 1: In Trimester 2, he had two late assignments, and in Trimester 3 he has no late or missing work.

Here are the responses from student 2 to the survey:

Respondent	Organization		Work completion		Paying attention		Behavior		Achievement	
	T2	T3	T2	T3	T2	T3	T2	T3	T2	T3
Student 2 w/ADHD	3	3	4	3	2	3	3	3	4	3
Teacher	2	2	3	3	2	3	2	3	n/a	n/a
T2=Trimester 2 - Spanish , T3=Trimester 3 - P.E.										

The following is the response to the interview question I asked student 2:

Question: Did you notice any other differences in school between Trimester 2 and Trimester 3?

Student 2 response: In Trimester 2 I daydreamed and was all over the place. Now after P.E., I'm tired in Choir.

Question: Sleepy tired?

Student 2 response: Calm, not too tired.

The following are the comments made by student 2's teacher:

Teacher of student 2: He has been a little less squirrely (in Trimester 3), but is still a handful.

Analysis

As stated earlier in this project, I considered how lack of physical activity affects students' academic achievement and behavior, and the repercussions for students with ADHD. This research project aimed to examine the correlation between grades, behavior

and lack of physical activity in sixth grade students. The data show that more students' GPAs decreased than increased, and the number of behavioral referrals more than doubled during Trimester 2 when they did not have P.E. I believe that my data is convincing that there is a correlation between decreased academic performance and increased behavioral problems when sixth grade students are not in a P.E. class.

As I analyzed the data, I looked for general trends as well as specific information. One of the trends I observed showed both the average GPA of the girls and boys had decreased from Trimester 1 to Trimester 2 when students were not in P.E. The girls' average GPA dropped from 3.66 to 3.51 during Trimester 2, the boys dropped from 3.33 to 2.88, and the class average dropped from 3.3 to 3.19. During Trimester 2, five girls and seven boys' GPA dropped, whereas, only four girls and three boys' GPA increased. Both of the students with ADHD experienced a decrease in GPA also. The GPA of student 1 dropped from 3.7 to 3.35 and student 2 dropped from 3.08 to 3.00. Therefore, although not all students' GPA decreased during trimester 2, 63% of students suffered a decrease in GPA. Moreover, it seems that once the students' grades started to decline, they could not recover and their grades continued to decline through Trimester 3; whereas, the few students whose grades rose during Trimester 2 were able to continue that trend through Trimester 3 and ended the school year with a higher GPA.

In addition to showing a decrease in GPA, students also experienced an increase of behavioral referrals during Trimester 2. In order to analyze the data on behavior, I sorted it into two categories: the first being attendance issues such as excessive tardies and unexcused absences, and the second being aggressive or inappropriate behavior, such as weapons, disruptions, profanity or vulgarity, bullying, physical injury (fighting),

disrespect and theft. In Trimester 1 there were six referrals: two concerned attendance (unexcused absences), and four concerned aggressive or inappropriate behavior (one for weapons, one for bullying and two for fighting). In Trimester 2, the number of referrals rose substantially from six to fourteen. Of the fourteen, eight referrals concerned attendance issues (seven for excessive tardies and one for unexcused absences), and six concerned aggressive or inappropriate behavior (three for disruptions, one for profanity or vulgarity, one for bullying and one for fighting). It should be stated that all seven referral for excessive tardies in Trimester 2 were from Spanish class. Students have a bit more leeway for tardies in P.E. class because attendance is taken ten minutes into the class; whereas, in Spanish students must be in their seat when the bell rings at the beginning of the period. To further triangulate my analyses, I included the referrals for Trimester 3 when students were back in P.E. In Trimester 3, there were eleven referrals in which two were for unexcused absences and nine were for aggressive or inappropriate behavior (one for weapons, two for disruptions, one for profanity or vulgarity, two for fighting, two for disrespect, and one for theft). Although the occurrences for referrals decreased in Trimester 3, the aggressive nature of the behavior increased.

The results of the surveys given to the two students with ADHD and their teachers also offer interesting insight to the teachers' and students' perceptions of the students' performance in school. Although student 1's GPA decreased from Trimester 2 (in Spanish) to Trimester 3 (in P.E.) from 3.35 to 3.06, and he had more referrals (two in Trimester 2 and five in Trimester 3), he perceived himself to be doing better both academically and in behavior. Student 1 with ADHD rated himself higher in Trimester 3 than in Trimester 2 in every area of the survey and significantly higher in paying

attention moving from “I need serious help with this” to “I feel pretty good at this.” Moreover, his teacher also rated him higher in organization and work completion, and rated him the same in attentiveness and appropriate behavior in class, noting that he had two late assignments in Trimester 2, but no late or missing assignments in Trimester 3. The difference in perception and achievement could be because student 1 enjoys P.E. where he can “get out all [his] energetic feelings,” and therefore felt more positive about school in general even though his positive attitude was not reflected in his grades.

Student 2 with ADHD seemed to have a more accurate perception of his performance. His GPA decreased from 3.00 in Trimester 2 (while in Spanish) to 2.72 in Trimester 3 (while in P.E.), and likewise he perceived himself as not doing as well academically. However, although he did not rate himself any differently in Trimester 2 than in Trimester 3, he showed a decrease in referrals from two for disruptions in Trimester 2 to one in Trimester 3. In his comments he did notice a change in his behavior and ability to focus between Trimester 2 and Trimester 3, noting that during Trimester 2 he “daydreamed and was all over the place,” whereas in Trimester 3 he was “calm”. His teacher supported this by stating that he behaved “a little less squirrely [in Trimester 3], but was still a handful.”

Implications/Recommendations

The data seem to show that there is indeed a correlation between academic success, behavior and physical activity. In addition, it seems that once students’ grades start to decline, they are unable to alter the downward direction. Although the decline in grades during Trimester 3 when students were back in P.E. was not as drastic as in

Trimester 2, the average GPA still decreased. Furthermore, behavior referrals increased in number and in aggressiveness between Trimester 1 and 2, and although the number of referrals decreased during trimester 3, the aggressive nature of the behavior increased. Again perhaps once the students started developing a habit of bad behavior during Trimester 2, they found it difficult to change direction. Clearly, we must address this trend as a school. In addition, the two students with ADHD perceived a difference in their ability to pay attention when they did not have P.E.

With this knowledge, my first recommendation would be to design a schedule so that sixth graders have P.E. and Spanish classes for the entire school year. Students would benefit from having both classes all year. As I have noted in my literature review, physical activity provides an outlet for energy, promotes good health and stimulates the brain in order for students to learn. On the other hand, students also benefit from studying a world language for the whole school year. Concurrency of learning in Spanish promotes language retention and language fluency. There are options available for creative scheduling that could be considered. Possible solutions include block scheduling, having an alternating schedule for just P.E. and Spanish, or moving from a six period day to a seven period day. Of all of the factors that can further complicate a smooth transition between fifth and sixth grade, the schedule of classes is something that can be controlled, therefore it can be changed.

Furthermore, I would recommend looking at what factors could influence the grades and behavior to continue their downward spiral in Trimester 3. This data was the most surprising to me. I want to believe that my students are progressing throughout the school year, building success upon success, but the data seem to say the opposite for most

students. Perhaps, as I have stated above, once the negative patterns have been established they are difficult to break. We need to look into this phenomenon more in depth to find out if this was a onetime occurrence or a trend for all of our sixth grade students. One possible influencing factor could be the month long disruption in May caused by the Washington MSP testing. Whatever is causing this decline in grades and behavior begs for more research.

Conclusion

After analyzing the data gathered, I found that there is a measurable difference in behavior and academic performance between the trimester the students take Spanish and the trimesters they are in P.E. Since grades decreased for 63% of the students and behavioral referrals more than doubled from Trimester 1 to Trimester 2, it appears that students' performance and behavior are negatively affected by not having a P.E. class. Moreover, in a society where obesity threatens to take a stronghold of our children, what are we communicating when we cut the very programs in our schools that can help them avoid this slow killer? So many factors are beyond our control as educators: divorce and other family crises, hormones, brain development and ADHD to name a few. We must look at what we can control. As an International Baccalaureate school, we are concerned with a balanced, holistic education which can only be accomplished with healthy fit students, and as a teacher I am concerned about providing the best environment for my students to learn in the present and develop healthy habits for their future.

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