RELATIONSHIP AMONG PHYSICAL ACTIVITY, SELF ESTEEM,
AND ACADEMIC PERFORMANCE

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BY

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Abstract

**RESEARCH TITLE:** Relationship Among Physical Activity, Self Esteem, and Academic Performance

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There have been studies focusing on the relationship between physical activity, and academic performance, but not everyone agrees on that relationship (Yu, Chan, Cheng, Sung, & Hau, 2006). The purpose of this study was to add self-esteem to previous information and examine the relationship among these three variables. In this study, fifty-nine sixth-grade students completed the physical activity questionnaire for older children (PAQ-C), and the physical self-description questionnaire (PSDQ). Parents of the students added information about their child’s academic grades in math, science, and language arts in order to calculate grade point average (GPA). Separate Pearson’s correlations revealed a significant relationship between physical activity and academic performance ($r=.585$); physical activity and self-esteem ($r=.426$); and academic performance and self-esteem ($r=.624$). The results provide strong support for regular physical activity.
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Relationship between Physical Activity and Academic Performance

Introduction

Almost half of students in schools K-12 do not participate in moderate to vigorous activities on a daily basis, and many schools are choosing to drop Physical Education classes (Marx, Wooley, & Northrop, 2005). With schools choosing to end these programs it adds to the rising rates of childhood obesity, which has more negative effects than the physical health of children. A lack of physical activity can also affect self-esteem, and create higher risk behaviors (Strong, Malina, Blimkie, Daniels, Dishman, Gutin, Hergenroeder, Must, Nixon, Pivarnik, Rowland, Trost, & Trudeau, 2005). All of these factors together make it difficult for K-12 students to be healthy, successful academically, and confident (Strong et al., 2005).

Throughout the last fifty years, K-12 students in the United States have steadily dropped their levels of physical activity due to changes in society and technology. Automobiles are used as the major transportation, rather than walking, jogging, or riding a bicycle. Technology has lowered the amount of work-related activity for many students (Marcus and Forsyth, 2003). To make things worse, computers and televisions have taken the place of outside activities and games creating sedentary lives for today’s children. According to recent research, the most popular leisure activity for American children is watching television, with an average of four hours per day, or two full months per year (American Academy of Childhood and Adolescent Psychiatry, 2001). Today, nearly half
of 10-18 year olds do not engage in enough physical activity and 40% have at least one major heart disease risk factor (Robbins, Powers, & Burgess, 2005).

Due to this lack of physical activity many chronic medical conditions are on the rise, such as cardiovascular disease, cancer, diabetes, high blood pressure, and pediatric obesity. The Center for Disease Control recommends that school-age children participate in sixty minutes or more of moderate to vigorous physical activity everyday (Centers for Disease Control, 2009). Without the proper amount of daily physical activity children will not develop proper skeletal health, aerobic fitness, muscular strength, endurance, and will have a higher risk to be overweight or obese (Strong et al., 2005).

One place where students grades K-12 participate in physical activity is at school during physical education class. Physical Education classes follow national and state standards to ensure their students are receiving the proper knowledge and activity levels (www.aahperd.org, 2009). Indiana state standards focus on motor skill and movement patterns, movement concepts, participation in regular physical activity, maintaining health-enhancing level of physical fitness, exhibiting responsible personal and social behavior, and learning the value of physical activity and health. These standards are put in place to ensure students are participating in physical activity and will be more likely to participate in lifelong fitness (www.aahperd.org, 2009).

Despite the many benefits of physical education and the decreasing amount of physical activity in K-12 students in the United States, many schools are choosing to drop Physical Education classes. One reason is that today, more than ever, school administrators are accountable for producing high academic achievement on state
mandated tests. Some view cutting Physical Education programs and recess as a way of allocating more time for core classes, such as math, reading, and writing in order to improve the state achievement scores in those areas (Smith & Lounsbery, 2009). Another reason Physical Education programs are being cut is the economy; schools are losing funding and need to find ways to balance their budget. Some believe that nothing is taught or learned in Physical Education, therefore it can be sacrificed (Carlson, Fulton, Lee, Maynard, Brown, Kohl, & Dietz, 2008). Both of these ideas discount the importance of physical education and its benefits, which are more than a healthy body (Strong et al., 2005).

Cutting physical education classes and recess to provide more time for core classes might seem like a reasonable option for school administrators, but there are studies that provide evidence that added time in these core areas does not provide higher test scores. The School Health, Academic Performance, and Exercise (SHAPE) study placed one group of students in core classes only, and a second group in both Physical Education and core classes. The study found that there was no difference in academic achievement between the groups despite the second group spending four times longer in Physical Education and less time in their core classes (Smith & Lounsbery, 2009). Another study published in the Journal of Pediatrics had the same findings, but added that those in the physical education group were healthier physically, mentally, and emotionally than the control group (Strong et al., 2005).

While there are those who discount the importance of physical education, there are studies that have found benefits to the body and mind. In 2005, Shephard and
Trudeau positively related daily physical education and academic performance. This was done through a daily physical activity group and a control group which was not exposed to daily physical activity. During this study the activity group’s academic performance was significantly higher than the control. Shephard also reported that learning occurs more rapidly when 14 to 26% of curricular time is allocated to daily physical education (Shephard and Trudeau, 2009).

Other studies have found small positive correlations among academic performance and Physical Education classes. These studies not only found positive relationships among Physical Education and academic performance, they also reported an increase in the health of the students (Strong, et al. 2005).

It has been difficult for researchers to find consistent evidence linking Physical Education and academic performance due to differences in curriculum, standards, and requirements of schools and states. It is easier for studies to show the relationship between physical activity and higher academic performance, due to the fact that activity can be easily defined and calculated. These studies can include activities done in Physical Education class, recess, or after school activities such as sports. A recent study showed that high school students participating in high levels of physical activity had higher grade point averages than those involved in low amounts of activity (Smith & Lounsbery, 2009).

Similarly, the American Health Foundation found that K-12 students with high levels of physical activity and low levels of sedentary leisure habits had higher
academic rank (Schmitz, Lytle, Phillips, Murray, Birnbaum, & Kubi, 2002). Another study found that academic achievement was not significantly related to Physical Education, but found higher grades were associated with vigorous physical activity (Carlson et al., 2008).

Even though there are more studies linking academic achievement to physical activity rather than Physical Education, it can be argued that students have learned skills in Physical Education that they use outside the classroom. These studies do not typically take into account why students are active or where they learned how to participate in the games or activities. For example, the American Alliance for Health, Physical Education, Recreation, and Dance believes that educators should develop programs that will increase the likelihood that students will maintain appropriate activity for their lifetime. If a student learns something in Physical Education, and is very active due to this knowledge or skill development, studies correlating physical activity and academic achievement may disregard this fact (American Alliance for Health, Physical Education, Recreation and Dance, 1999).

Regular physical activity has many health benefits, while also providing mental health and learning benefits. Dr. Taras (2005) has found that it improves blood flow to the brain, raises levels of norepinephrine, and endorphins, reduces stress and improves academic achievement. In addition, he reported that physical activity in school can teach students to cooperate, abide by rules, and feel more connected socially to their school and community (Taras, 2005). There are other studies that show physical activity increases the number of synapses in the brain possibly leading to increased cognition and potential
prevention of cognitive deterioration as adults (Mackinnon, Christensen, Hofer, Korten, & Jorm, 2003). Physical activity and mental health are very important for academic achievement; only when schools have healthy students will they be able to achieve their goals (Marx et al., 1998).

The preceding review of the literature provided mixed findings regarding the relationship between physical education/activity, and academic achievement. There is another factor that physical activity provides students that may affect academic performance. This factor is a higher self-esteem (Nelson & Gordon-Larsen, 2006).

A three-year study in Sweden revealed that self-esteem is critical in learning situations, and a strong connection between physical activity and self-esteem was found in children and adolescents. Throughout the three-year study those who were physically active typically had a higher self-esteem (Raustorp, Mattsson, Svensson, & Stahle, 2006).

Other researchers, such as Taras, and Potts-Datema also found a similar connection among self-esteem, physical activity, and academic performance, but in a different fashion. They argue that students participating in low amounts of physical activity have a higher chance of being overweight or obese. Students falling into these categories tend to have low self-esteem, higher anxiety, and miss many more days of school (4 days per month) than the regular student. These factors typically contribute to a low GPA. They found that students in the same general locations who participated in daily physical activity had a higher self-esteem, lower anxiety, attended school more often, and had a higher GPA (Taras & Potts-Datema, 2005).
Physical activity helps raise self-esteem, which is needed in social situations in order to function at a high level (Robbins, Powers & Burgess, 2005). Without physical activity many adolescents do not have a positive self-esteem, which can lead to lower grades and high risk behaviors. Risky behaviors are defined as using drugs, alcohol, smoking, participating in sexual intercourse and truancy from school (Kirkcaldy, Shephard, & Siefen, 2002). A study conducted by Nelson and Gordon-Larsen (2006) found that high school students who participate in less than five days of physical activity are more likely to have sexual intercourse, smoke cigarettes, drink and drive more frequently, use illegal drugs, and be truant from school than students that are more active. The study also reported that students who participated in physical activity more than five times per week had higher grades in Math and English.

The previous studies have reported significant relationships among physical education, physical activity and academic performance. Others, however, have reported no correlation. In a recent study, researchers found that participation in physical activity did not improve academics, and even increased the risk of juvenile delinquency for males (Faulkner, Adlaf, Irving, Allison, Dwyer, & Goodman, 2006). Due to the conflicting findings about the relationships, additional research is warranted. The purpose of this study was to explore the relationship among physical activity, self-esteem, and academic performance in school age children.
Methodology

Participants

The study took place in a small rural town in Midwest Ohio, comprised of roughly 817 people (97.43% White, .12% Black, .61% Asian, and 1.84% from two or more races). The participants were 59 sixth-grade students. The students were comprised of both males (n = 25), and females (n = 34), and the age of the students ranged from 11 to 12 years of age.

Sampling Procedures

This study used a convenience sample representing three sixth-grade classes. Participants completed the Physical Activity Questionnaire for Older Children (PAQ-C), and the Physical Self-Description Questionnaire (PSDQ). The student’s parents were given a questionnaire asking their child’s grades in math, science, and language arts, in order to calculate grade point average. The sixth-grade classes were used because they would typically remember the activities they participate in, and be more likely to have daily or weekly chores at home than younger students.

Instruments

The instruments used in this study were the PAQ-C, and the PSDQ. The PAQ-C was created by Crocker, Bailey, Faulkner, Kowalski, & McGrath, in 1997. The PAQ-C is a self-
administered, 7-day recall questionnaire that measures general moderate to vigorous physical activity levels. It was developed to assess general levels of physical activity for students in grades 4 to 8 and approximately 8 to 14 years of age. The PAQ-C has been found to be a reliable and valid testing instrument in the area of general physical activity (Kowalski, Crocker, & Faulkner, 1997).

A daily activity log sheet was also given to the students in order to track their physical activity for one week. This was done to help the students remember what they had done for the past week when they were filling out their PAQ-C.

The PSDQ was created by Herbert Marsh, Garry Richards, Steven Johnson, Lawrence Roche, and Patsy Tremayne in 1994. It measures 11 scales: Strength, Body Fat, Activity, Endurance/Fitness, Sports Competence, Coordination, Health, Appearance, Flexibility, General Physical Self-Concept, and Self-Esteem. This questionnaire uses these 11 scales to determine a person’s global self-esteem. The PSDQ has been used in many studies and found to be a reliable and valid testing instrument for ages 8-14 (Yu, Chan, Cheng, Sung, and Kit-Tai Hau, 2006).

Finally, a parental physical activity questionnaire was given to the parents. This questionnaire asks for grades in Math, Language Arts, and Science, along with the parent’s activity levels. This questionnaire was developed by Zac Graham and has not been found to be reliable or valid in any study. Examples of the parent letter and parental survey, activity log, PAQ-C, and PSDQ can be found in the Appendix.
Data Collection Procedures

During the student’s Physical Education class the high school Physical Education teacher came and explained the reason for the research and why it was important. He also explained that participating was optional and would not affect their grade. The students who were willing to participate were given a consent letter to take home to their parents to sign and return. The students were given two weeks to return the consent letter; those that returned the forms with their parent’s permission were involved in the study. After the two weeks had passed the high school Physical Education teacher returned to Physical Education class and took the students that were willing and had parental permission to a quiet conference room. He explained, “These are questionnaires involving your physical activity and self-esteem. If at anytime you do not want to answer a question you can skip it, if you wish to quit you may do so whenever you like.” The survey included a cover letter explaining why the survey was being conducted, who was conducting it, and how to correctly fill it out. The directions also made it clear that the survey was to be anonymous, it was not mandatory, and did not affect their grade in anyway.

Design

The design of the study was correlational, exploring the relationship among physical activity, self-esteem and academic performance. The data collected was put into the Statistical Package for the Social Sciences (SPSS). A Pearson’s correlation was used to examine the relationships with an alpha level set at .05.
**Results**

A descriptive analysis using SPSS showed that the average PAQ-C (activity) test score was 2.63 on a 5 point scale, with a standard deviation of .8165. The average PSDQ (self-esteem) test score was 4.25 on a 6 point scale, with a standard deviation of .9335. The average GPA was 3.12 on a 4 point scale, with a standard deviation of .9184. Table 1 presents the individual scores for the PAQ-C, the PSDQ, and GPA.

**Table 1. Individual Scores and GPA**

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As for the relationship among physical activity, self-esteem, and academic performance, a positive relationship was found between both physical activity and self-esteem, and physical activity and academic performance. Using a Pearson’s correlation to examine physical activity and self-esteem an r-value of .426 was found, showing a positive correlation. The two tailed test showed p = .001, showing the data is significant, r(59) = .426, p<.001. The significance of the correlation can be shown by r^2 = .18 =18%, meaning 18% of self-esteem can be contributed by physical activity. This shows a significant positive relationship of small strength. Figure 1 presents the information for this finding.
Using a Pearson’s correlation to examine physical activity and academic performance, an r-value of .585 was found, showing a positive correlation, $r(59) = .585, p < .001$. The two tailed test showed $p = .000$, showing the data had a significant positive relationship of moderate strength. The significance of the correlation can be shown by $r^2 = .34 = 34\%$, meaning 34\% of GPA can be contributed by physical activity. Figure 2 presents the information for this finding.
A positive relationship was also found between self-esteem and academic performance. Using a Pearson’s correlation to examine GPA and self-esteem, an r-value of .624 was found, showing a positive correlation, $r(59) = .624$, $p< .001$. The two tailed test showed $p = .000$, showing the data had a significant positive relationship of strong strength. The significance of the correlation can be shown by $r^2 = .39 = 39\%$, meaning 39% of self-esteem can be contributed by GPA. Figure 3 presents the information for this finding.
Figure 3. PSDQ and GPA Scores
Discussion

The majority of the literature examining the relationship between physical activity and academic performance reported a positive relationship between the two. This study also found a positive relationship, providing further support for the findings.

This study did have some limitations. First the PAQ-C testing instrument was administered in late winter. Although it has been found to be a reliable and valid testing instrument, it may have affected the outcome of this study. The PAQ-C asks the physical activities that are done in the student’s spare time, then lists 22 activities to choose from, and leaves a place where students can write any other activity that has not been included. This questionnaire was given during the winter in a poor rural area. Many of the listed activities are not offered around this area, and most cannot afford to drive to participate on a regular basis. Also, the test was given in late winter/early spring. During this time many of the activities on the list would not be possible to do due to the weather. As far as providing an area for students to fill in something that was not on this list, only 10 students took the initiative to do so. Only 10 of the 59 students that took the questionnaire reported doing something other than, skipping, canoeing, in-line skating, tag, walking, biking, jogging, aerobics, swimming, baseball, dance, football, badminton, skateboarding, soccer, street hockey, volleyball, floor hockey, basketball, ice skating,
cross-country skiing, or ice hockey. The participants may have been in a hurry to get the questionnaire done and if it was not there, they did not bother to write it down.

The final limitation to the PAQ-C is that it requires students to remember the past 7 days and accurately describe the physical activities and duration. This is a challenging task for some adults, so some sixth-graders may have had some difficulty. In an effort to minimize this problem, each participant completed an activity log sheet at the end of each day. Although it is unclear whether or not the activity log enhanced recall for participants, it would be a good addition to the PAQ-C questionnaire.

The second questionnaire used in this study was the PSDQ, and in previous studies it has also been found to be reliable and valid. Even though it has been used in many studies and been proven to be a great tool, there are aspects that could skew data. Some of the girls taking this questionnaire felt awkward answering questions about their looks, therefore they did not answer all of the questions. Although it may not be possible to ask some of these questions in a different way, the data is skewed when questions are not answered.

Another aspect of the PSDQ that could skew data is the way some questions are worded. There are many of the same questions on the test that are worded two different ways. During the test there were students that had a hard time understanding what they were asking. For example, some students answered true to the following questions, “I don’t have much to be proud of. I have a lot to be proud of.” This questionnaire was created for the sixth-grade age group, but the wording may have confused some students.
The parental questionnaire was delivered to them by children. This was a major limitation, because there is no way of knowing how many questionnaires were actually delivered to the parents. Also, some parents might feel obligated to lie if their child participates in very little physical activity, or has poor grades. The parent might feel like they are being judged and not fill it out correctly, or skew the results with false information. Other parents might not know or care and fill out the Questionnaire quickly, not fully reading and answering the questions correctly.

The final limitation to this study is the small amount of participants (59) and the fact that it was a convenience sample. This small number cannot give an accurate picture of all sixth-grade students. Also, because the parents and students knew the person conducting the study, they might be inclined to report favorable information.

**Future Direction**

Additional investigation is needed to examine a larger group representing different areas throughout the state of Ohio. The study will also seek information from the parents through a questionnaire focusing on parental involvement in both physical activity and academics. This survey will be given only to the parents that have given permission for their child to be in the study. It is thought that these parents will tend to give more accurate information, because they will have already taken the time to read the instructions and fill out the permission form for their child to be in the study. The reason parental information is needed is to find how, or if they are affecting their child’s physical activity and academic performance. According to Dr. Henry Goitz, there are
many parents who push their children extremely hard in athletics in hopes of championships and a future as a professional athlete (Stenson, 2004). If a study shows that physical activity has a positive correlation with academics it might be because the parents are pushing athletics hard, even though the child may not be interested.

**Conclusion**

This study showed that physical activity and academic performance in math, science, and language arts had a positive relationship with moderate significance. It showed that physical activity and self-esteem had a positive relationship with minor significance. Lastly, it showed that academic performance and self-esteem had a positive relationship with strong significance. These findings were found by using the PAQ-C and PDSQ instruments that have been found to be reliable and valid.
References


Physical


Strong, W. B., Malina, R. M., Blimkie, J. R., Daniels, S. R., Dishman, R. K., Gutin, B.,

Appendix A

Parent Letter
Dear Parents or Guardians,

I am your child’s physical education teacher and I am doing a study to complete my Masters degree at Ball State University. The study examines the relationship between physical activity, self-esteem, and academic performance. If you are willing to participate I need you to fill out the brief survey attached to this letter. Also, I need your signature on the attached paper permitting your child to complete a physical activity questionnaire. Participating in this study is optional and will not affect your child’s grade in any way. Once the information from you and your child is received it will be coded and the original documents destroyed to keep everything anonymous. If you have the time I would appreciate your help so that I can study this important subject.

Thanks for your time,

Zac Graham
Study Title  Relationship Among Physical Activity, Self-Esteem, and Academic Performance

Parental Consent

I give permission for my child to participate in this research project entitled, “Relationship Among Physical Activity, Self-Esteem, and Academic Performance.” I have had the study explained to me and my questions have been answered to my satisfaction. I have read the description of this project and give my permission for my child to participate.

__________________________________________________
Parent’s Signature                                    Date

Child Assent

The research project has been explained to me and I have had the opportunity to ask questions. I understand what I am being asked to do as a participant. I agree to participate in the research.

__________________________________________________
Child’s Signature                                    Date

Researcher Contact Information

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Appendix B

Parental Questionnaire Form
Parental Questionnaire Form

Directions:

Please answer these questions about your child to the best of your knowledge.

Survey:

Student Grade Level: ________ Gender: ________

1. What is your child’s grade in Math, Language Arts, and Science?
   Math ________ Language Arts ________ Science ________

   For the following questions please circle Yes or No

4. Is physical activity important to you? Yes or No

5. Do you encourage your child to be active? Yes or No

6. Are you active? Yes or No
Appendix C

The Physical Self-Description Questionnaire (PSDQ)
The Physical Self-Description Questionnaire (PSDQ)

Name__________________________  Age________  Male______ Female______

School__________________________  Grade________

Instructions:

This is a chance to look at yourself. It is not a test. There are no right answers and everyone will have different answers. Be sure that your answers show how you feel about yourself. Please do not talk about your answers with anyone else. We will keep your answers private.

The purpose of this study is to see how people describe themselves physically. In the following pages you will be asked to think about yourself physically: For example, how good looking you are, how strong you are, how good you are at sports, whether you exercise regularly, whether you are physically coordinated, whether you get sick very often and so forth. Answer each sentence quickly as you feel now. Please do not leave any sentence blank.

When you are ready to begin please read each sentence and decide your answer. There are six possible answers for each question, “True”, “False”, and four answers in between. There are six numbers next to each sentence, one for each of the answers. The answers are written at the top of the numbers. Choose you answer to a sentence and put a circle around the number under the answer you choose. Do not say your answer aloud or talk about it with anyone else.

Before you start there are two examples that we will do together.

Example

<table>
<thead>
<tr>
<th></th>
<th>False</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I like to read comic books</td>
<td>1 2 3 4 5 6</td>
</tr>
</tbody>
</table>
2. I like to watch T.V.  

If you want to change an answer you have marked you should cross out the circle and put a new circle around another number on the same line. For all sentences be sure that your circle is on the same line as the sentence you are answering. You should have only one answer circled for each sentence. Do not leave out any sentences, even if you are not sure which number to circle.

If you have any questions hold up your hand. Otherwise please begin.

<table>
<thead>
<tr>
<th>False</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

1. When I get sick I feel so bad that I cannot even get out of bed.  

2. I feel confident when doing coordinated movements.  

3. Several times a week I exercise or play hard enough to breathe hard (to huff and puff).  

4. I am too fat.  

5. Other people think I am good at sports.  

6. I am satisfied with the kind of person I am physically.  

7. I am attractive for my age.  

8. I am a physically strong person.  

9. I am quite good at bending, twisting, and turning my body.  

10. I can run a long way without stopping.  

11. Overall, most things I do turn out well.  

12. I usually catch whatever illness (flu, virus, cold) that is going around.  

13. Controlling movements of my body comes easily to me.
14. I often do exercise or activities that makes me breathe hard. 
   1 2 3 4 5 6
15. My waist is too large. 
   1 2 3 4 5 6
16. I am good at most sports. 
   1 2 3 4 5 6
17. Physically, I am happy with myself. 
   1 2 3 4 5 6
18. I have a nice looking face. 
   1 2 3 4 5 6
19. I have a lot of power in my body. 
   1 2 3 4 5 6
20. My body is flexible. 
   1 2 3 4 5 6
21. I would do well in a test of physical endurance and stamina. 
   1 2 3 4 5 6
22. I don’t have much to be proud of. 
   1 2 3 4 5 6
23. I am sick so often that I cannot do all the things I want to do. 
   1 2 3 4 5 6
24. I am good at coordinated movements. 
   1 2 3 4 5 6
25. I get exercise or activity three or four times a week that makes me huff and puff and lasts at least 30 minutes. 
   1 2 3 4 5 6
26. I have too much fat on my body. 
   1 2 3 4 5 6
27. Most sports are easy for me. 
   1 2 3 4 5 6
28. I feel good about the way I look and what I can do physically. 
   1 2 3 4 5 6
29. I’m better looking than most of my friends. 
   1 2 3 4 5 6
30. I am stronger than most people my age. 
   1 2 3 4 5 6
31. My body is stiff and inflexible. 
   1 2 3 4 5 6
32. I could jog 3 miles without stopping. 
   1 2 3 4 5 6
33. I feel that my life is not very useful.  
34. I hardly ever get sick or ill.  
35. I can perform movements smoothly in most physically activities.  
36. I do physically active things (like jogging, dancing, biking, aerobics, P.E., or swimming) at least three times a week.  
37. I am overweight.  
38. I have good sports skills.  
39. Physically I feel good about myself.  
40. I am ugly.  
41. I am weak and no muscles.  
42. My body parts bend and move in most directions well.  
43. I think I could run a long way without getting tired.  
44. Overall, I’m no good.  
45. I get sick a lot.  
46. I find my body handles coordinated movements with ease.  
47. I do lots of sports, dance, P.E., or other physical activities.  
48. My stomach is too big.  
49. I am better at sports than most of my friends.
50. I feel good about who I am and what I can do physically.  
51. I am good looking.  
52. I would do well in a test of strength.  
53. I think I am flexible enough for most sports.  
54. I can be physically active for a long period of time without getting tired.  
55. Most things I do, I do well.  
56. When I get sick it takes me a long time to get better.  
57. I am graceful and coordinated when I do sports and activities.  
58. I do sports, exercise, dance, and other physical activities almost every day.  
59. Other people think that I am fat.  
60. I play sports well.  
61. I feel good about who I am physically.  
62. Nobody thinks that I’m good looking.  
63. I am good at lifting heavy objects.  
64. I think I would perform well on a test measuring flexibility.  
65. I am good at endurance activities distance running, aerobics, bicycling, swimming, or
cross-country skiing.

66. Overall, I have a lot to be proud of.

67. I have to go to the doctor because of illness more than most people my age.

68. Overall, I’m a failure.

69. I usually stay healthy even when my friends are sick.

70. Nothing I do ever seems to turn out right.
Appendix D

Physical Activity Questionnaire (PAQ-C)
**Physical Activity Questionnaire (PAQ-C)**

Name: ___________________________  Age: ________

Sex:  M ______  F ______  Grade: ________

Teacher: __________________________

We are trying to find out about your level of physical activity from **the last 7 days** (in the last week). This includes sports or dance that make you sweat or make your legs feel tired, or games that make you breathe hard, like tag, skipping, running, climbing, and others.

**Remember:**

1. There are no right and wrong answers — this is not a test.
2. Please answer all the questions as honestly and accurately as you can — this is very important.

1. Physical activity in your spare time: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Mark only one circle per row.)

<table>
<thead>
<tr>
<th>Activity</th>
<th>No</th>
<th>1-2</th>
<th>3-4</th>
<th>5-6</th>
<th>7 times or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skipping</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Rowing/canoeing</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>In-line skating</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Tag</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Walking for exercise</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Bicycling</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Jogging or running</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Aerobics</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Swimming</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Baseball, softball</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>
2. In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? (Check one only.)

I don't do PE .............................................. O
Hardly ever .................................................. O
Sometimes .................................................... O
Quite often .................................................... O
Always ...............................................................O

3. In the last 7 days, what did you do most of the time at recess! (Check one only.)

Sat down (talking, reading, doing schoolwork) ... O
Stood around or walked around.........................O
Ran or played a little bit..............................O
Ran around and played quite a bit.............O
Ran and played hard most of the time...........O

4. In the last 7 days, what did you normally do at lunch (besides eating lunch)? (Check one only.)

Sat down (talking, reading, doing schoolwork) ....O
Stood around or walked around .....................O
Ran or played a little bit............................O
Ran around and played quite a bit...............O
Ran and played hard most of the time..........O

5. In the last 7 days, on how many days right after school, did you do sports, dance, or play games in which you were very active? (Check one only.)

None .................................................................O
1 time last week .................................................O
2 or 3 times last week.....................................O
4 times last week............................................O
5 times last week............................................O

6. In the last 7 days, on how many evenings did you do sports, dance, or play games in which you were very active? (Check one only.)

None .................................................................O
1 time last week .................................................O
2 or 3 times last week.....................................O
4 or 5 last week..............................................O
6 or 7 times last week .. ... O

7. On the last weekend, how many times did you do sports, dance, or play games in which you were very active? (Check one only.)

   None ................................................................. O
   1 time ............................................................. O
   2 — 3 times ..................................................... O
   4 — 5 times ..................................................... O
   6 or more times ................................................. O

8. Which one of the following describes you best for the last 7 days? Read all five statements before deciding on the one answer that describes you.

   A. All or most of my free time was spent doing things that involve little physical effort ........................................................................................................ O

   B. I sometimes (1 — 2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics) ................. O

   C. I often (3 — 4 times last week) did physical things in my free time............... O

   D. I quite often (5 — 6 times last week) did physical things in my free time.......... O

   E. I very often (7 or more times last week) did physical things in my free time..... O

9. Mark how often you did physical activity (like playing sports, games, doing dance, or any other physical activity) for each day last week.

<table>
<thead>
<tr>
<th></th>
<th>Little</th>
<th></th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>bit</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monday</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Tuesday</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>
10. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

Yes ........................................... O

No .............................................. O

If Yes, what prevented you? _______________________________
Appendix E

Activity Log
## Activity Log

<table>
<thead>
<tr>
<th>Type of Activity</th>
<th>Amount of Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monday</strong></td>
<td></td>
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<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tuesday</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wednesday</strong></td>
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<td></td>
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<td></td>
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<tr>
<td><strong>Thursday</strong></td>
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<td></td>
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<td>-------</td>
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<tr>
<td>Friday</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Saturday</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Sunday</td>
<td></td>
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<td></td>
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</tbody>
</table>

*Total Time* ____________