1-2011

Correlations Between High School Athletic Participation and Academic Performance

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Document Type

Thesis

Degree Name

Master of Education (MEd)

Department

Graduate Education

Keywords

Master of Education, thesis, Christian education, high school students, sports, athletics, althletic participation, academic achievement

Subject Categories

Curriculum and Instruction | Education

Comments

Action Research Report Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Education

Correlations Between High School Athletic Participation and Academic Performance

by

Tim Klein

B.A. Dordt College, 2005

Thesis
Submitted in Partial Fulfillment
of the Requirements for the
Degree of Master of Education

Department of Education
Dordt College
Sioux Center, IA
January 2011

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Abstract

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Correlations between High School Athletic Participation and Academic Performance

For many who follow school-sponsored sports there has long been a stigma that athletes are just "dumb jocks." In a 2007 article on the perception of athletes, Simons and his colleagues state, "These negative perceptions are embodied in the dumb jock stereotype that holds that athletes lack the motivation and intelligence to succeed at the intercollegiate level" (Simons, Bosworth, Fujita, & Jensen, 2007, p. 251). The authors of this article demonstrate the perception by listing jokes that professors have told in classes making athletes seem unqualified for college. One example is of a professor who had the student athletes stand up in class and then made the comment "These are the people who will probably drop this class" (Simons, Bosworth, Fujita, & Jensen, 2007, p. 251).

High school officials have even been perceived as placing athletics before academics. Texas Superintendent Charles Lamb tells the students in his graduate level classes, "If you wanted to cut out the English IV, the Algebra 1 and shorthand,…nobody would raise a fuss. You cut one 'C' team in junior high, and they come and fire you" (Goldman, 1991, p. 67). Division 1 football coach Don Brown agrees, "You may do a tremendous job graduating your players, but if you suffer through two seasons of 1-9 records, you're not going to be around long" (McLaughlin & Sappenfield, 2003, p. 1). According to the 2004 article in *Education Week*, the media director for a Georgia school's 'Touchdown Club' states, "We are the biggest business in Valdosta. You have a lot of visitors who stop off the interstate to make sure they see a game. All these people aren't coming for academics or SAT scores" (Gehring, 2004, p. 1).

There are others that believe school-sponsored athletic participation can help the students to perform better in the classroom. A 2004 report from the National Association of State Boards of Education (NASBE) showed that students in a North Carolina high school who participated in athletics had a GPA of 2.86 while students that did not participate in athletics had a GPA of 1.96. Other statistics in the report show an Iowa high school where athletes also outperformed non-athletes by a GPA score of 2.93 to 2.47 (National Association of State Boards of Education, 2004). Other researchers believe the skills learned as a member of an athletic team will carry over to help students perform better in the classrooms. The NASBE report (2004) states that "engaging in daily practices instills in players qualities

of discipline, teamwork, physical fitness, and organization" (p. 18). These skills and attributes can enhance the student's ability to find success in the classroom.

The 2004 report published by the NASBE found that 98% of high schools sponsored sports programs. Within those high schools 70% of males and 53% of females participated in at least one sport (National Association of State Boards of Education, 2004). With the large number of high schools sponsoring sports programs and the number of students that participate, the need for a study to look into whether student athletes are having their education enhanced by their participation in sports versus their non-participant classmates is necessary. The purpose of this research study was to examine possible relationships between the amount of high school students' school-sponsored athletic participation and their academic performance.

Research Questions

The analysis for this study was focused in two parts. First, this researcher was interested in finding any correlations between students' athletic participation and their academic performance. Second, this researcher was interested in whether these correlations were positive or negative in nature. In order to focus the research, the following questions were addressed:

1. Is there a correlation between the amount of high school students' school-sponsored athletic participation and their academic performance?
2. Does increasing the number of sports a student participates in have a positive or negative correlation to the student's academic performance?

Important Terms

The following terms will be used throughout this research. Unless otherwise noted, the definitions have been developed by the researcher for the purpose of this study.

School-Sponsored Athletic Participation: Athletic teams a student could participate in that are controlled by the school and take place outside of the typical school day. These sports would have regular scheduled practices and competitions that take place within the dates dictated by the state's governing body.

Academic Performance: Academic performance will be judged based on the subjects' scores on a standardized test and by GPA. This will be a general term for the overall performance; more specific performances will be stated in terms of the instruments that were used.

Grade Point Average (GPA): The average grade earned by a student, figured by dividing the grade points by the number of credits attempted.

Iowa Test of Educational Development (ITED): This test is regularly given to students in the state of Iowa to test their development in different academic areas such as Vocabulary, Reading Comprehension, Language, Spelling, Mathematics, Computation, Social Studies, Science, and Sources of Information. These scores will show how students compare to one another on very similar tests. This test will also show the overall knowledge of a student, not just how well they are doing in the classroom. ITEDs are also given to a large population of students, allowing comparison to multiple students, not just those in the study's population (ITED: Iowa Tests of Educational Development - Iowa Testing Programs, 2010).

Literature Review

This research study is interested in whether there is a relationship between high school students' school-sponsored athletic participation and their academic performance. Most researchers agree that participation in athletics will not guarantee a better GPA, but as Hartmann (2008) puts it:

> It is both useful and important to think about high school sports not as an inherently and automatically positive educational force but rather as more of what John MacAloon has called 'an empty form,' a tool whose social meaning and use and impact is dependent on the ways in which it is employed. If not properly manipulated or utilized, sport can be detrimental to educational performance and outcomes. (p. 23)

The following literature review will examine the research and try to answer the question of whether school-sponsored athletic participation has positive outcomes for the students.

Academic Achievement

Marsh and Kleitman (2002) found that students school-sponsored athletic participation was a value to the students. In their study, Marsh and Kleitman examined the effects of extracurricular school activities (ESA) on high school and postsecondary outcomes. More specifically, their research focused on students' activities both in school and out-of-school and the impact these ESAs had on their academic performance. Their study found that as students' participation levels increased, their academic achievement also increased. Marsh and Kleitman also found that in high levels of involvement a student would begin to see a drop in their academic achievement. This means that there were positive results for low and moderate participation in school-sponsored athletic participation, but this positive connection leveled off and then began to drop as students' participation levels continued to rise. The authors concluded "that for nearly all the nonlinear effects the point of diminishing returns only occurred for extremely high levels of ESA. Hence, there were positive effects of ESAs for all but the most extreme levels of activities" (Marsh & Kleitman, 2002, pp. 490-491).

Hauser and Lueptow (1978) also looked at the effects of school-sponsored athletic participation on students' academic achievement. Their study focused on the GPA of nearly 900 high school seniors. Hauser and Lueptow (1978) found that "Students with some participation do about as well as students with a great deal of participation" (p. 305). Their study followed students' GPA from their sophomore year in high school to their senior year. Overall, Hauser and Lueptow found the GPA of athletes was higher than non-athletes, but they also found that non-athletes were able to increase their GPA more in the time period than their athlete counterparts.

The NASBE (2004) reviewed several studies that have been done recently on who participates in athletics and how that participation affects academics. The NASBE results show a different story from Hauser and Lueptow's findings, stating "students-athletes consistently outperformed non-athletes academically, with the gap widening the more athletes participated" (2004, p. 9). Eccles and her colleagues also looked at how school-sponsored athletic participation would affect high school students with the focus on the association between athletic participation and educational outcomes. Eccles et al

(2003) state "we found clear evidence that participation in extracurricular activities during the high school years provides…a promotive context in terms of academic performance" (p. 872).

Kristjánsson and his researchers (2009) focused their research on the effects of students' physical activity on their academic achievement. This study, examining over 5800 adolescents, looked for a connection between the adolescents activity levels and their academics. These researchers found that as students' activity levels rose, the students' academic achievement also increased. The results "showed that age-appropriate weight status, participation in physical activity, and sedentary lifestyles were all associated with better academic achievement" (p. 77). The NASBE Executive Director Brenda Welburn agrees, "Anecdotal evidence suggests that students who are active in athletics and cocurricular activities perform better academically" (Vail, 2006, p. 33).

Grade Point Average

One way to measure students' academic achievement is by their grade point average (GPA). Several researchers have looked at this aspect of academic achievement in regards to students' school-sponsored athletic participation. Eccles et al (2003) stated that extracurricular activities promote academic performance. Their study found that students who were involved in sports were more likely to see increases in GPA while in high school. Marsh and Kleitman (2002) found that in-school extracurricular activities positively associated with higher grades along with other academic outcomes. Hauser and Lueptow's (1978) study stated that students who remained involved in sports through their senior year had a higher GPA of 2.54 as compared to non-participants who had a GPA of 2.31 (p. 306). Hauser and Lueptow (1978) also found that students who were more involved in athletics did not increase their GPA as many points as the students that did not participate. "The high participants [had] an overall change of .02, compared to an overall change of .11 for the nonathletes" (p. 305). As the authors discuss the results of their study, they continually return to the fact that students who are involved in athletics start with higher GPAs and maintain that level, while non-participants start lower but are able to raise their GPA from sophomore year to senior year.

Test Scores

Test scores are another way to determine if there is a difference between the academic performance of athletes and non-athletes. When test scores are used, students are compared using the same set of standards on the same test. This is a true one-to-one comparison that can show if the academic performance is something a student is born with, or if there is a connection to the amount of school-sponsored athletic participation. Grissom (2005) performed a study with nearly 900,000 students in the state of California to look at a connection between a student's fitness levels and their ability to pass a standardized test. Grissom's study found that "Physically fitter students, even when fitness was defined in different ways, had higher achievement test scores" (p. 19). Students were given six fitness tests. Students who were able to pass all six tests had a mean score 15 points higher in standardized math tests than students who passed zero fitness tests. When taking standardized reading tests, more physically fit students had a mean score 18 points higher than students that were not able to pass any fitness tests. Further, students that were able to exceed the goals of the fitness test were able to have higher mean scores on all tests than students that merely passed the fitness tests (Grissom, 2005). According to Grissom (2005), the results of his study showed a "statistically significant positive linear relationship between fitness and achievement" (p. 23).

Negative Effects

Along with the positive outcomes that come along with school-sponsored athletic participation, there can be aspects that hold students back from becoming great students. According to Hartmann (2008), focusing on athletics becomes "a time and energy drain for student-athletes, or that an over-emphasis on sport might distract attention and concern from the core academic curriculum and educational mission of the school" (p. 12). Hartmann reviewed many of the expert reports on the relationship between athletic participation and educational achievement and found, even among the experts, there is disagreement about the benefits of athletic participation when it comes to educational achievement. Eccles and her colleagues (2003) noted from their study that all is not perfect for the athletes in the study; sports participants were more likely to be involved in risky behavior, using alcohol

and drugs, than most of the other groups they studied. These authors found that students who highly valued sports in the 10th grade lost a substantial amount of connection with the school if they were no longer involved in sports by the 12th grade. As students lost this connection with school, the authors believe they also lost some of the affirmation that is likely to be connected to participation. This loss of affirmation can lead students to lose the motivation needed to continue to do their best in school, which will lead to a decrease in academic performance (Eccles, Barber, Stone, & Hunt, 2003). Marsh and Kleitman (2002) found that both in- and out-of-school activities were positively associated with higher grades, but that out-of-school activities were associated with negative outcomes as well, while in-school extracurricular school activities did not have these associations.

The Athletic Advantage

With some of the negative outcomes that can come from school-sponsored athletic participation, why is it that research shows that athletes succeed in school? Jack Kemp, a former pro football player turned Congressman, states that, "You can't succeed in sport without discipline in mind and body. That discipline spills over, to study and get prepared for college" (Vail, 2006, p. 33). Hauser and Lueptow (1978) suggest a possibility "that the same social or personality factors that cause athletic participation and success also cause academic achievement and attainment" (p. 308). Marsh and Kleitman's (2002) research found that sports participation had the largest positive effect of any extracurricular school activity category, the highest effects were found in the area of postsecondary educational outcomes. Marsh and Kleitman (2002) studied activities that were not typically thought of as being directly related to academics in order to see if these activities would contribute to growth in academic outcomes. Their results show that sports particularly had a positive connection to academic growth (Marsh & Kleitman, 2002). In most schools there is a link between the grades that a student receives and their ability to participate in extracurricular activities. According to Vail (2006), "In many cases, students come to school and study just so they can participate in sports. They keep their grades up so they can maintain their spot on the team" (p. 33). No matter the reason for a student's success, researchers agree that

students participating in school-sponsored athletics have a great opportunity to be successful in the academic setting.

Conclusions

After completing their studies, the following researchers came to the same general conclusion: school-sponsored athletic participation has a positive relationship with students' academic achievement. Hauser and Lueptow (1978) believe their study shows students who participate in athletics have a higher average GPA than non-participants. Marsh and Kleitman (2002) believe their "results show that ESAs [extracurricular school activities] complement rather than compete with traditional curricular goals to enhance academics and non-academic outcomes" (p. 508). Hartman (2008) believes his research "dispels—or more accurately *could* dispel if more widely promoted, publicized, and understood—prevailing cultural stereotypes and myths about 'dumb jocks' and thus help focus attention instead on the educational benefits, opportunities, and possibilities of high school sports participation" (p. 7). Kristjánsson and his group of researchers (2009) agree and encourage schools to "consider strengthening the opportunities to facilitate, support, and reinforce a wide range of health-related behavior through comprehensive programming, especially physical activity" (p. 77). Eccles and her fellow researchers (2003) added that students who were involved in sports were more likely to have a positive educational outcome. These researchers agree that students who are involved in school-sponsored athletic activities will see benefits in the classroom. In each of these studies, students who participated in athletics were able to outperform their peers who did not participate.

Methods and Procedures

Previous research has shown participation in extracurricular activities can lead to positive academic outcomes. This study will also look for any relationships between athletics and academics. This study will look to extend previous research by focusing on the amount of participation a high school student pursues and any correlations to their academic performance. The following is a description of the methods and procedures used to conduct this study.

Participants

Parental informed consent was obtained from 51% of the ninth and eleventh grade students (n=137) enrolled at the selected school. Any student who did not complete the year, moved into the district, or did not complete the ITED was excluded from the study. The study sample comprised of 70 participants (9^{th} grade = 37, 11^{th} grade = 33). Students were selected from the ninth and eleventh grade due to their participation in the ITED. The participants' make up was largely homogeneous in terms of age, ethnicity, and background. Generally the students were middle class, Caucasian, residing in a rural setting. Students were included in the sample based on their willingness to voluntarily sign the release of data form (see Appendix A). The selected school does not test tenth or twelfth grade students using the ITED, therefore they were not considered for the study.

Materials

In order to assess the knowledge base of the students participating in this study, the Iowa Test of Education Development was used. According to the Iowa Department of Education, "Iowa uses the … Iowa Test of Educational Development (ITED) for high schoolers as our annual statewide assessment" (ITED: Iowa Tests of Educational Development - Iowa Testing Programs, 2010). The test has been used in Iowa since 1942 and has become a very reliable test for school districts as they assess their students. Due to the fact that so many students in the state take this test, there is a high quality of external validity as other schools look at this data and interpret it for their districts. The scores that were used for comparison for this study come from the National Percentile Rank (NPR) for the 2009-2010 academic year. The NPR number compares the individual student to other students from around the United States who took the same test. The score that is given to each student represents the percentage of students that received a lower score than the student in question; this score will range from 1-99 (ITED: Iowa Tests of Educational Development - Iowa Testing Programs, 2010). Each participant takes several different tests that make up their composite score; these included Vocabulary, Reading Comprehension, Spelling, Revising Writing, Concepts & Problem Solving, Computation, Social Studies, Science, and Sources of Information. For this study the students were compared using their Reading Total Score which includes

Vocabulary and Comprehension; Mathematics Total Score which includes Concepts & Problem Solving and Computation; and their Overall Composite Score. The Overall Composite score is useful in showing the overall knowledge base of the student. These three tests were selected based on the research of previous studies (Marsh & Kleitman, 2002).

Students were also analyzed using their grade point average (GPA) for the school year. All students were compared using the same four-point scale for all classes. The GPA scores included the grades earned during the 2009-2010 school year. This academic school year was selected in order to compare a student's academic achievement in the year in which they competed in a specific number of school-sponsored athletic activities.

The final piece of data came from the students' participation in athletics. Students, who were selected by the coaches of the respective school-sponsored athletic activities, were placed on rosters. Based on these rosters, students were given a number, from 0-5, indicating the amount of participation they had for the 2009-2010 school year. This year was chosen so all academic performances could be compared in the year in which participation occurred.

Student ITED scores and GPA scores were obtained from the selected school's principal. Data was acquired based on a student's willingness to participate in the study. Athletic participation was obtained from the school's website where all rosters are available for public viewing.

Methods

In order to receive the best results for this study, an ex post facto research method was chosen. This allowed students to perform as they would normally for the school year chosen, with the researcher making no manipulation to the variables. This form of research allowed the researcher to look at the pure data and examine if there was any correlation between the variables already mentioned. Ex post facto research allowed the sample group to be studied in the most natural way possible without pressure from the study or the researcher.

Procedures

Students and parents were given two opportunities to become participants in this study. First, the permission form (see Appendix A) was given to students at school during a required class for either ninth or eleventh graders. Due to insufficient participation, a letter was sent to the students' homes along with the permission form in order to receive a larger sample. From the second opportunity a satisfactory sample size was achieved (see Table 1).

In order to process the data, the students needed to be divided into groups. As a student's permission form was returned the student was assigned an ID number by the researcher. The student's name was then cross referenced with the rosters to determine the amount of school-sponsored athletic participation he or she was a part of. A student's individual academic data was then entered for future analysis (see Appendix B).

Table 1

Sample Size by Grade/Participation

Grade/Participation	n_{sample}	$n_{population}$	Percentage
9th/0	5	16	31%
9th/1	10	21	47%
9th/2	9	14	64%
9th/3	11	17	65%
9th/4	2	5	40%
9th/5	0	1	0%
11th/0	4	11	36%
11th/1	11	24	46%
11th/2	14	22	59%
11th/3	4	5	80%
11th/4	0	1	0%
Total	70	137	51%

Results

Data Analysis

Table 2 shows the mean scores for students in the ninth grade along with their amount of school-sponsored athletic participation. For the ninth grade students, those who did not participate in school-sponsored athletic activities received the highest scores on all four areas of academic achievement. Comparatively, those students who participated in four activities received the lowest scores in all four areas of academic performance. Individual student scores are available in Appendix B.

Table 2

Mean Scores for Grade Nine

	Amount of Participation				
Test	0	1	2	3	4
Total Math	94.00	83.20	87.67	77.45	67.50
Total Reading	90.20	79.70	78.78	76.45	57.00
Composite Total	91.40	82.70	83.22	76.36	66.00
GPA	3.69	3.42	3.57	3.39	2.77

Table 3 shows the mean scores for eleventh grade students along with their amount of school-sponsored athletic activities. Overall, students who did not participate in school-sponsored athletic activities had the top scores on the Reading Test, Overall Composite score and GPA (79.25, 84.75 and 3.68 respectively), while students who participated in three athletic activities had the top scores on the Math Test (89.50). Students who participated in one athletic activity scored very similar scores to those who did not participate, while students who participated in two activities had the lowest scores in three of the four categories. Individual student scores are available in Appendix B.

Table 3

Mean Scores for Grade Eleven

	Amount of Participation			
Test	0	1	2	3
Total Math	85.00	82.09	77.43	89.50
Total Reading	79.25	78.64	72.86	70.25
Composite Total	84.75	83.82	77.57	80.25
GPA	3.68	3.57	3.47	3.55

The Pearson Product-Moment Correlation Test was used to determine any correlation between variables. The Pearson Test was selected due to its ability to measure linear dependence between two variables and the ability to give a score which shows correlation. After performing the Pearson Test analysis, a negative correlation was found between each of the four tests of academic achievement and the variables of participation and grade level. This test was run combining both grade levels into one group. There was very little correlation between grade level and the four tests showing this variable had no significant effect on the student's academic achievement as it was tested (see Table 4). Participation in school-sponsored athletic activities did have a significant effect on students' academic achievement when it came to the Reading Test, Overall Composite score, and GPA. The Pearson analysis showed a negative correlation of -0.207 for the Reading Test, -0.231 for Overall Composite score and -0.206 for GPA (see Table 4 and Appendix C).

Table 4

Correlation Between Independent Variables And Student Achievement Tests

	Correlation Coefficients			
Academic Performance Tests	Participation	Grade Level	Mean	Std. Dev.
ITED Math Total	-0.181	-0.052	82.33	17.53
ITED Reading Total	-0.207*	-0.084	77.07	20.53
ITED Composite Total	-0.231*	-0.010	81.04	17.69
GPA	-0.206*	-0.091	3.49	0.49

* Correlation is significant at the 0.05 level (1-tailed)

Findings

The purpose of this study was to examine any relationships between a high school student's school-sponsored athletic participation and their academic performance. This study was focused on two questions in order to evaluate any relationships. The first question asked "Is there a relationship between the amount of high school students' school-sponsored athletic participation and their academic performance?" The data showed a negative relationship between these two variables. According to the sample group, as the amount of participation in school-sponsored athletic activities increased, the student academic achievement decreased. For ninth grade students who participated in one athletic activity, there was a 0.27 drop in their GPA, while students who participated in four athletic activities saw a drop of 0.92 (see Table 2). As can be seen in Figure 1, the trend line for ninth grade GPA has a negative correlation to the amount of participation. This means students with zero participation would be receiving A's while a student with four athletic activities would receive a B-.

Although the rate of change for eleventh grade students was not as large as the ninth grade student (see Figure 1), a change still existed. Students who participated the most (three athletic activities) had a mean score 0.13 points lower than those who did not participate in any athletic activities (see Table 3). In the entire sample group, there was a significant negative correlation between ITED Reading scores, ITED Composite scores and GPA. These correlations were significant at the 0.05 level, meaning a change

in the amount of participation had an impact on the student's academic achievement. This significant correlation answers the question in the affirmative that there is a correlation between the amount of participation in school-sponsored athletic activity and a student's academic achievement.

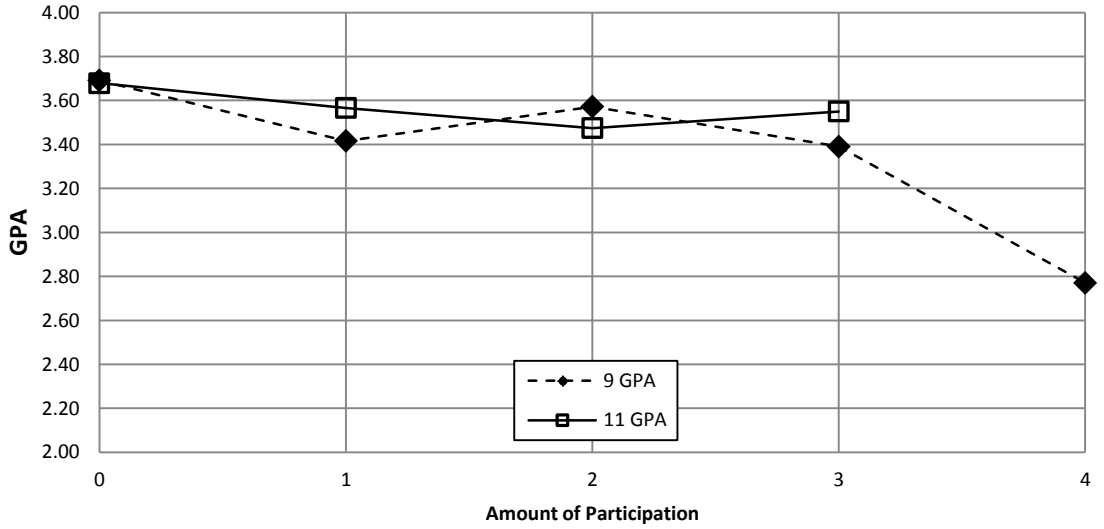

Figure 1. Grade point average as a function of student participation in school-sponsored athletic activity.

The second question this study asked was, "Does increasing the number of sports have a positive or negative correlation on the student's academic performance?" As can be seen in Figure 1 and Table 4, there is a negative correlation between the two. If a student increases the number of athletic activities he participates in, he will see a negative effect on his academic performance. This was proven to be significant at the 0.05 level using the Pearson Test. Students were also assessed using their ITED scores in three areas: Reading, Math and Overall Composite scores. The mean scores on these tests also showed a negative correlation when the Pearson Test was run (see Table 4). The mean score of students who participated in four athletic activities dropped by 22.5 and 22.44 points on the Math Test and the Overall Composite score respectively compared to those who did not participate in athletic activities. The Reading Test showed an even larger gap, students with the greatest amount of participation received a score 28.33 points lower than those who did not participate (see Table 5).

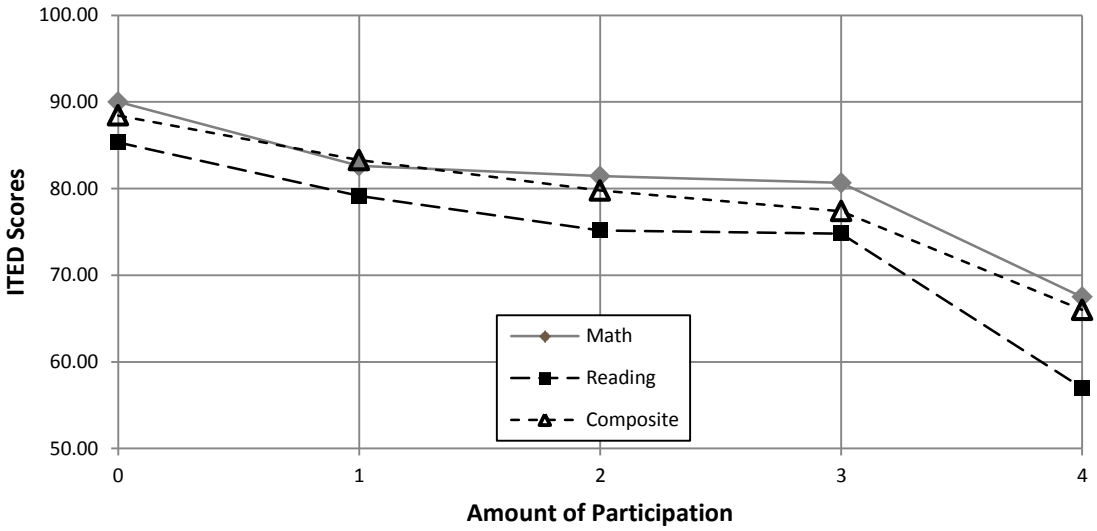

Figure 2. Achievement scores on individual ITED tests as a function of student participation in school-sponsored athletic activity.

Discussion

Summary

The purpose of this study was to examine any relationship between the amount of high school students' school-sponsored athletic participation and their academic performance. This study looked at ninth and eleventh grade students at a small midwestern Christian school to see if students who participate in multiple sports score as well in academic performance as their peers who do not participate in athletics. Previously researchers had concluded that participation in school-sponsored athletic activities was beneficial to the student, but few researchers discussed whether participation in multiple athletic activities could increase a student's academic achievement. Hauser and Lueptow's study (1978) showed that students who participate in athletics had a higher GPA than those who did not participate. Eccles et al (2003) agreed. Their study noted that students who were involved in athletic activities were more likely to have a positive educational outcome.

Still there exists a perception that those students who participate in athletics do not hold the same academic standing as their peers who do not participate in athletic activities. According to Simons et al (2007), there is a negative perception that athletes do not have the same motivation or intelligence and therefore will struggle to succeed in the college classroom. This is where the desire for this study came

from. If athletic participation is good for a student, is there a point where this benefit begins to diminish and the student's academic performance begins to drop?

This study sampled students who were attending high school during the 2009-2010 academic year to see if a relationship existed between academic performance and athletic participation. Some students in this sample participated in no athletic activities during this time, while other students participated in up to four athletic activities. Student academic performance was based on four areas: the ITED Reading Test, the ITED Math Test, the ITED Composite scores, and their GPA for the 2009-2010 academic year. The three ITED scores gave the study a base of the knowledge levels of the students. These tests were given to all students in the study and all students answered the same questions in the same amount of time. GPA was used to show how the students performed in the classroom on a day to day basis. Based on the comment by Simons et al (2007) concerning the negative perception of athletes lacking the motivation needed in the classroom, the GPA score would show whether they were able to do better in the classroom or on a standardized test.

Conclusion

Implications

Research has repeatedly shown that athletic participation and academic performance go together and have the ability to improve each other. The implications of this study, however, indicate that participation in school-sponsored athletics has a negative relationship with a student's academic performance. This is valuable information to many schools where students strive to be a part of a team, or where parents push their children to participate. As parents consider the amount of time their student spends participating in athletic activities, this study will give concern to becoming overly involved in athletics. Though there are many outside factors that will affect a student's ability in the classroom and on standardized tests, this study shows that the variable of athletic participation will have a negative effect on the student's academic performance.

Table 5

Mean Scores for the Full Group

Participation	N	Math	Reading	Composite	GPA
0	9	90.00*	85.33*	88.44*	3.69*
1	21	82.62*	79.14*	83.29*	3.49*
2	23	81.43	75.17	79.78	3.51*
3	15	80.67	74.80	77.40	3.43
4	2	67.50	57.00	66.00	2.77
Full Group	70	82.33	77.07	81.04	3.49

* Scores above Full Group Means

A second implication of this study is that students who participate in more athletic activities will have less success academically than those who do not participate or participate in one sport. As this study shows, students who participated more often in athletic activities had a lower mean score on their ITEDs and a lower mean GPA score in both the ninth and eleventh grade (see Table 2 and Table 3). According to the mean scores for all four tests, students who did not participate in any athletic activities or participated in only one athletic activity performed better than the mean scores for the whole group (see Table 5). Those who participated in two, three or four athletic activities were only able to score above the full group mean score once on all four tests (see Table 5). The data represented by the sample students shows that by participating in a greater amount of school-sponsored athletic activities, a student's academic performance will diminish. This data will be valuable to schools as they consider the amount of time a student is allowed to put into school-sponsored activities taking place outside of the typical school day.

Limitations

Possible limitations to this study include the voluntary use of data from students and parents. Due to the fact that students had the option of being included in this study, some chose not to be involved in the study. Only one-third of the students that had no participation in school-sponsored athletic activities responded to the permission form. Having a better turn out of this group may have changed the results to meet those of other studies previously discussed. This limitation could be offset by selecting a larger

population; future studies could include other schools or consider a longitudinal study to see the results over time.

Along with the previous limitation is the size of the sample group, more importantly, the size of the individual groups. Due to the selection of a small population, the individual groups in the sample became very small. Because some of these groups were quite small, the data may not give a true representation of the greater population. An example of this can be seen in the group of ninth grade students who participated in four athletic activities. This group consisted of only two students, student #62 and student #65. For the ITED Composite score, student #62 earned a score of 95, while student #65 earned a score of 37. This gave the group a mean score of 66.00, placing the group 15.04 points below the mean for the sample population. Had the sample population been larger for this group, the results may have followed the trends set by previous research.

The data from this study had a very strong negatively skewed distribution of results as can be seen in the mean scores and standard deviation numbers in Table 4. Many of the students performed above the mean score on all four forms of assessment. For example, the mean score for GPA was 3.49, 61 percent of the students in the study scored above the mean (see Appendix B); the other tests also had 60 or 61 percent of the students above the mean score. This negative skew can be seen by looking at the standard deviation of the different tests. For each of the four measurements, going one standard deviation to the right will bring the scores near the maximum possible score. In fact, the Math score exceeds the maximum possible score (see Table 4). A simple explanation for this negative skew can be a few students receiving a very low score on the test and pulling the mean down for the whole group or their individual group. In this study five scores fell more than two standard deviations below the mean on all three ITED tests, while four students' GPA scores were two standard deviations below the mean. These outliers can quickly distort the data.

Another limitation to this study is the academic classes the students enrolled in for the 2009-2010 academic year. There are some classes that all ninth or eleventh grade students took, but other classes could be selected at random, or may have been taught by different teachers. Some classes may be

considered more academically challenging or students may perceive a teacher to grade more rigorously, and therefore may be avoided by some students looking to keep a strong GPA. Therefore, students who wished to challenge themselves may have selected courses that would lower their GPA, while other students may have selected courses that would inflate their GPA.

This study researched the relationship between a high school student's athletic participation and their academic performance. Through this research we can see a relationship does exist and this relationship appears to be negative. Although further research using a larger population would be beneficial, it is clear from this research that increasing participation in athletics will not positively relate to improved academic performance. Everyone involved in a student's educational upbringing will need to consider the amount of time the student invests in athletic participation and weigh that time against the amount of time needed for the student to successful academically.

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Appendixes

APPENDIX A

Parental Consent Form for Voluntary Release of Student Information

PARENTAL CONSENT FORM FOR VOLUNTARY RELEASE OF STUDENT INFORMATION

Your child is invited to participate in a study to help me understand the relationship between school sponsored athletic participation and academic success. I am hoping to see how students in high school are affected by the number of athletic activities they participate in. I have chosen to conduct my study based on the students in your child's high school, Unity Christian High School.

I will be receiving information from your child's high school Administrator regarding his or her Grade Point Average for the 2009-2010 academic year, as well as test scores from the Iowa Test of Educational Development. Your child's high school will also be submitting the rosters of all school sponsored athletic teams. Your child's scores will be combined and compared with other students similar to themselves, for example if your child is a sophomore, his or her scores will be compared to other sophomores as well as to the larger group. There is no time requirement of your child for the purpose of this study, only the use of their GPA, test scores, and athletic participation.

Participating in the study does not have any foreseeable risks or any direct benefits to your child. The greater benefits will go to their school and other schools who will be able to use the study to make informed decisions on student athletic participation. There is no risk of your child's academic information being released through this study.

All information collected about your child will kept strictly confidential and accessible only to the investigator and faculty sponsor, except as may be required by law. There will be no names associated with the academic information as this study is researched, published and released. The release of your child's academic information is strictly voluntary

If you and your child decide to release your information, you will be free to withdraw your consent at any time with no penalty to you. You may request a copy of this form for your personal records.

If you have any questions about this study and your child's participation in it, please contact me, Tim Klein either by phone (712) 722-6304 or by email, tklein@dordt.edu. If you have additional questions about this study, feel free to contact my faculty sponsor, Craig Stiemsma at (712) 722-6309. If you have questions in general about your child's participation as a research participant in studies at Dordt College please contact the Chair of the Institutional Review Board, Dr. Sherri Lantinga, at (712) 722-6038.

You are making a decision whether or not to release your child's academic information. You and your child's signatures below indicate that you have both decided to release your academic information for the purposes of this study, having read the information provided above and having had your questions answered.

Thank you for your consideration and time,
Tim Klein, Investigator Harlan De Vries, Administrator

Printed Name of Student	Signature of Student	Date
Printed Name of Parent/Guardian	Signature of Parent/Guardian	Date
Printed Name of Investigator	Signature of Investigator	Date

Please Return by mail by Friday, June 11, 2010

APPENDIX B

Individual Participant Data

ID #	Athletic Participation	Grade Level	ITED Math	ITED Reading	ITED Composite	GPA
15	0	9	90	68	82	3.41
19	0	9	99	99	99	4.00
44	0	9	92	91	86	3.81
64	0	9	99	99	99	4.00
63	0	9	90	94	91	3.24
82	0	11	90	96	98	3.52
105	0	11	76	70	71	3.34
85	0	11	93	99	98	4.00
80	0	11	81	52	72	3.86
53	1	9	97	85	84	3.16
68	1	9	65	79	71	3.19
1	1	9	28	28	19	1.54
54	1	9	90	89	93	3.60
72	1	9	90	86	93	3.88
23	1	9	99	98	99	3.91
21	1	9	81	96	95	3.71
7	1	9	92	79	92	3.54
6	1	9	94	59	82	3.69
59	1	9	96	98	99	3.96
133	1	11	93	91	90	3.83
99	1	11	99	97	99	4.00
136	1	11	79	90	88	3.78
87	1	11	99	99	99	3.87
86	1	11	99	98	99	3.95
134	1	11	86	70	82	3.29
84	1	11	62	44	69	2.91
116	1	11	99	94	94	3.93
119	1	11	58	52	72	3.82
115	1	11	86	97	92	2.93
113	1	11	43	33	38	2.92
47	2	9	92	93	93	3.90
60	2	9	72	75	80	3.69
33	2	9	96	95	97	4.00
24	2	9	97	54	81	3.60
73	2	9	94	80	88	3.91

ID #	Participation	Grade Level	ITED Math	ITED Reading	ITED Composite	GPA
74	2	9	57	75	57	3.07
18	2	9	98	91	99	4.00
8	2	9	86	66	69	2.46
3	2	9	97	80	85	3.53
129	2	11	81	62	77	3.84
121	2	11	51	90	80	3.74
135	2	11	93	62	75	2.86
130	2	11	97	74	85	3.48
98	2	11	73	88	88	3.51
97	2	11	47	42	57	3.29
94	2	11	81	89	95	4.00
89	2	11	90	81	87	3.98
101	2	11	88	76	68	3.52
83	2	11	66	62	61	3.93
103	2	11	97	77	83	2.69
137	2	11	66	85	84	3.65
78	2	11	73	58	70	2.74
100	2	11	81	74	76	3.43
29	3	9	92	73	78	3.49
2	3	9	57	79	75	3.57
51	3	9	86	84	91	3.84
28	3	9	99	95	96	4.00
32	3	9	75	85	86	3.10
34	3	9	98	88	95	3.86
40	3	9	57	26	24	2.74
43	3	9	81	67	70	3.52
45	3	9	92	91	91	3.55
48	3	9	78	95	78	2.43
56	3	9	37	58	56	3.21
79	3	11	95	92	98	3.60
125	3	11	95	91	89	3.43
118	3	11	95	82	89	3.95
110	3	11	73	16	45	3.22
62	4	9	98	94	95	3.33
65	4	9	37	20	37	2.21

APPENDIX C

Pearson Product Moment Correlation Analysis

		Variables					
		Participation	Grade Level	ITED Math	ITED Reading	ITED Composite	GPA
Participation	Correlation	1	-.155	-.181	-.207*	-.231*	-.206*
	Sig. (1-tailed)		.100	.067	.043	.027	.043
	N	70	70	70	70	70	70
Grade Level	Correlation	-.155	1	-.052	-.084	-.010	.091
	Sig. (1-tailed)	.100		.335	.244	.466	.227
	N	70	70	70	70	70	70
ITED Math	Correlation	-.181	-.052	1	.670**	.815**	.553**
	Sig. (1-tailed)	.067	.335		.000	.000	.000
	N	70	70	70	70	70	70
ITED Reading	Correlation	-.207*	-.084	.670**	1	.898**	.574**
	Sig. (1-tailed)	.043	.244	.000		.000	.000
	N	70	70	70	70	70	70
ITED Composite	Correlation	-.231*	-.010	.815**	.898**	1	.704**
	Sig. (1-tailed)	.027	.466	.000	.000		.000
	N	70	70	70	70	70	70
GPA	Correlation	-.206*	.091	.553**	.574**	.704**	1
	Sig. (1-tailed)	.043	.227	.000	.000	.000	
	N	70	70	70	70	70	70

Note. Correlation refers to the Pearson Correlation test.

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

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