THE EFFECTS OF ATHLETIC PARTICIPATION ON ACADEMIC ACHIEVEMENT

by
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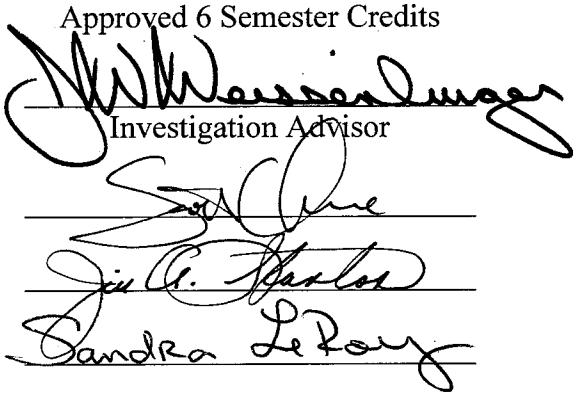

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ABSTRACT

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The purpose of this study was to determine whether athletic participation at a small high school in northwestern Wisconsin was related to academic achievement as assessed by the students' WKCE test scores and grade point averages. Another purpose was to determine whether the academic achievement of the athletic participants and nonparticipants were affected by gender.

The number of sports in which the student participated, the Wisconsin Knowledge and Concepts Exam test scores, the grade point averages, and the gender of 10^{th}, 11^{th}, and 12^{th} grade students ($n = 297$) in a rural Wisconsin school district were examined. Pearson product-moment correlation coefficients and a multivariate analysis of variance (MANOVA) analyses were used to determine whether athletic participation was positively related to academic achievement and whether the academic achievement of the students were affected by their sports participation and gender.

Although results indicated no significant correlation between the number of sports participated in and their WKCE test scores, they did indicate a positive relation between

the number of sports participated in and their grade point averages. Results also indicate that those who participated in one or more sports were more likely to have higher GPAs and higher test scores. Further, the female students had higher GPAs at the end of their sophomore year than the male students, regardless of whether or not they participated in sports.

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CHAPTER 1

Introduction

A continuing debate about the effects of athletic participation on academic achievement has occurred since the 1960s. It has become an even bigger issue now that there are budget constraints in our nation's schools. Decision makers often find it easy to cut athletic programs because they believe sports are not overly important in the academic arena. In the late 1980s, Holland and Andre (1987) argued that many secondary schools eliminated some of the extracurricular programs based solely on financial grounds without considering the empirically based knowledge of the positive effects of these programs on adolescent development. It is obvious that decision makers need to be well informed about the impact of athletics on academics before they decide to retain or eliminate them.

A review of the literature shows that athletic participation can enhance, rather than decrease, academic achievement (NFHS, 2002). The National Federation of State High School Associations (NFHS) and its membership assert that interscholastic sports promote citizenship, sportsmanship, lifelong lessons, teamwork, self-discipline, and facilitate the physical and emotional development of our nation's youth. NFHS stated that, "students who participate in activity programs tend to have higher grade-point averages, better attendance records, lower dropout rates and fewer discipline problems" (NFHS, 2002, p. 2). Eppright, Sanfacon, Beck, and Bradley (1997) also examined the importance of athletics during childhood and adolescent development. They argued that participating in athletics "encourages the development of leadership skills, self-esteem, muscle development and overall physical health" (Eppright et al., 1997, p. 71).

Athletic participation also may help at-risk students and other students who have academic difficulties, both during high school and in higher education. Holloway (2002) found that educators believe that athletic participation reduces the probability of school dropout by approximately forty percent. Involvement in these activities was perceived by the educators to support at-risk students by maintaining, enhancing, and strengthening the student-school connection (Holloway, 2002).

Mahoney and Cairns (1997) argued that extracurricular participation decreases the tendency to drop out because it gives those students at-risk an opportunity to create a positive and voluntary connection to the educational institution. Snyder and Spreitzer (1990) found a greater percentage of students who participate in high school athletics went to college compared to students who did not participate in athletics. The Snyder and Spreitzer study also concluded that the positive effect of athletic participation on college attendance was more evident among students with lower levels of cognitive development.

Despite the claims of many, there were earlier theories that posited that athletic participation detracts from academic achievement. Coleman's (1961) zero-sum model suggested that students who put their energies into sports are less likely to pursue academic objectives. He asserted that youth do not have time or energy to achieve excellence and satisfaction in both arenas.

Some have found differences in the effects of athletic participation between males and females, particularly with regard to the amount of students participating. A report from the Harvard Prevention Research Center on Nutrition and Physical Activity at the Harvard School of Public Health (HPRC) and the National Women's Law Center

(NWLC) indicated that girls in Massachusetts consistently lag behind boys in their participation in physical activity, depriving them of the health, social, and emotional benefits of playing sports (Massachusetts Girls Lag Behind, 2004). After examining the main effects of participation in sports, Videon (2002) indicated that the beneficial effects of sports participation are nearly twice as strong for male than for female athletes.

Statement of the Problem

Previous research has shown that athletic participation can enhance the academic achievement of student athletes at the high school level. However, Coleman's zero-sum model suggests that students who put their energies into sports are less likely to pursue academic objectives, asserting that youth do not have time or energy to achieve excellence and satisfaction in both roles (Coleman, 1961). With current budget constraints threatening the existence of athletic programs, more research needs to be conducted so that educational decision makers can become informed about the role that athletics has in the educational experience for high school students. Furthermore, an examination of the effects of athletic participation for male and female student athletes is needed.

Purpose of the Study

This study will examine the effects of athletic participation on academic achievement. It will attempt to determine whether athletic participation enhances the academic achievement of high school students. Further, the effects of athletic participation will be analyzed to determine if there are significant differences between male and female athletes.

Research Objectives

This study will address the following research questions:

1) Is involvement in multiple sports correlated with student achievement as assessed by the Wisconsin Knowledge and Concepts Exam (WKCE)?
2) Is involvement in multiple sports correlated with student achievement as assessed by Grade Point Averages (GPAs)?
3) Does sports participation in one or more sports affect student achievement?
4) Does gender have an effect on student achievement?
5) Are there differential effects on the academic achievement of student athletes according to gender?

Definition of Terms

For clarity of understanding, the researcher will define the subsequent terms as follows:

Zero-Sum Model

A model, which indicates that the addition of one variable results in less of another. For example, more time involved in athletic participation leads to less time spent on academics (Marsh, 1992).

Activity Programs

High school programs (e.g., sports, music, speech, drama, and debate team) where young people learn lifelong lessons.

Grade Point Average

The average obtained by dividing the total number of grade points earned by the total number of credits attempted. The GPA used in this study was based on a four-point scale.

Wisconsin Knowledge and Concepts Exam

A statewide test administered to 4th, 8th, and 10th graders that measures academic achievement in the areas of reading, language arts, math, science, and social studies. In this study, 10th grade test scores are analyzed.

CHAPTER 2

Review of the Literature

This chapter will discuss the research examining the relation between athletics and academics. The effects of athletic participation on standardized tests, public policy, and adolescent development also will be discussed. Further, gender differences among athletic participants and non-participants will be examined.

General Effects of Sports Participation

Many educators appear to support the idea that extracurricular activities, especially athletics, can enhance academic performance. The National Federation of State High School Association (NFHS) is a major supporter of athletics. NFHS and its membership assert that interscholastic sports promote citizenship, sportsmanship, lifelong lessons, teamwork, self-discipline, and the physical/emotional development of our nation's youth. A NFHS report stated that, "students who participate in activity programs tend to have higher grade-point averages, better attendance records, lower dropout rates and fewer discipline problems" (NFHS, 2002, p. 2). According to NFHS, students learn self-discipline, build self-confidence and develop the skills necessary to handle competitive situations. This organization argues these curricular goals are expected of the public schools so that students become responsible adults and productive citizens. According to NFHS, participation in high school activities is often a predictor of later success in life (NFHS, 2002).

NFHS uses several sources to support their views on athletic participation and athletics. In March of 1996, the Carnegie Corporation of New York found that young people in sports experience multiple benefits. Their results indicated that, "at their best,

sports programs promote responsible social behavior and greater academic success, confidence in one's physical abilities, an appreciation of personal health and fitness, and strong social bonds between individuals and institutions" (NFHS, 2002, p. 3).

NFHS (2002) also cites a Minnesota State High School League survey of 4,800 high school students conducted in March of 1995. This survey found that 91% of those students said that those who participate in school activities tend to be school leaders and role models. Several students also noted that participation in school activities allowed them to experience opportunities for developing self-discipline, and those opportunities often were unavailable in the general classroom setting (NFHS, 2002).

In 1985, the NFHS sponsored another survey of high school principals in all 50 states. The survey was conducted by Indiana University and funded through a grant from the Lily Endowment in Indianapolis. The results were as follows:

1. 95 percent of the principals believed that participation in activities teaches valuable lessons to students that cannot be learned in a regular classroom,
2. 99 percent of the principals agreed that participation in activities promotes citizenship,
3. 95 percent of the principals agreed that activity programs contribute to the development of "school spirit" among the student body,
4. 76 percent of the principals said they believe the demand made on students' time by activities is not excessive, and
5. 72 percent of the principals said there is strong support for school activity programs from parents and the community at large (NFHS, 2002, p. 4).

NFHS (2002) also reported results from a University of Colorado study of nearly

22,000 students for the Colorado High School Activities Association (McCarthy, 2002). In the spring of 1997, McCarthy collected data from student participants in the Jefferson County high schools. Students who participated in interscholastic activities had "significantly higher" grade-point averages than students who did not participate in them. In the Jefferson County schools, an overall grade point average (GPA) of 3.093 was reported for students who participated in interscholastic activities, and only a 2.444 GPA was reported for the non-participating students. The Jefferson County schools won 39 state championships in the 1990s; and, according to NFHS, these same schools still maintained "superior" academic ratings (NFHS, 2002).

Other researchers have found similar results. In an empirical study of 10,613 students, Marsh (1992) examined the effects of extracurricular activity participation on student growth and change during the final two years of high school. Using the large, nationally representative High School and Beyond (HSB) database from the National Center for Educational Statistics (NCES) to obtain his sample, Marsh (1992) correlated extracurricular activity participation with background variables (e.g., social economic status, race, gender, school-year size, and prior educational experiences), outcome variables from the sophomore and senior years (e.g., standardized achievement, GPA, coursework selection, self-concept, locus of control, absenteeism, getting into trouble, and educational and occupational aspirations), and postsecondary outcomes (e.g., occupational and educational attainment, and educational and occupational aspirations). Marsh's results suggested that extracurricular activity participation increases a student's commitment to school, social and academic self-concept, educational aspirations, coursework selection, homework, academic achievement, and subsequent college

attendance. Marsh (1992) also noted that the results contradict "zero-sum models" that claim total extracurricular activity participation detracts from more narrowly defined academic goals.

Silliker and Quirk (1997) studied the relation between academic performance and interscholastic athletic participation by examining the in-season versus out-of-season academic performances of soccer players. The participants (123 high school students) in the study included male and female soccer players from five rural schools in New York. These soccer players did not engage in another scholastic sport during the academic quarter after the soccer season. A school counselor from each of the five schools collected the following information on each participant: participant identification number, sex, grade level, first quarter GPA, second quarter GPA, and absence totals for each of the first two quarters. It was found that soccer participation occurred without significant risk to academic performance. Further, results suggested that athletic participation enhanced academic achievement. Although noting it was a common strategy to take athletic participation away from students who were not performing well in academics, Silliker and Quirk posited that student athletes with academic difficulties would receive more benefit from peer tutoring and study-skills training.

Using a 1980 sample from the High School and Beyond database, Camp (1990) examined the causal relationship between youth activities (including athletics) and academic achievement. The variables examined included: gender, family background, typical use of time (including hours of homework per week, television viewing habits, and hours of paid employment), and the student's prior indicators of academic ability (including mathematics, vocabulary, and reading subtests administered during the

sophomore year). Findings suggested that academic achievement was enhanced by student participation in extracurricular activities such as athletics. The results also provided some support to the notion that students with academic difficulties should be permitted to participate in extracurricular and cocurricular activities when there is evidence of the positive effects from such participation.

In a survey of 11,995 male students, Snyder and Spreitzer (1990) found supportive evidence that athletic participation enhances later success in academics. The researchers used completed questionnaires to compare white, black, and Hispanic students in terms of their participation in varsity level athletics and later attendance at an institution of higher learning. Their results supported other studies that found positive correlations between high school athletic participation and academic achievement. The Snyder and Spreitzer findings demonstrated that a greater percentage of students who participated in high school athletics went to college. The study also showed the positive effect of athletic participation on college attendance was more evident among students with lower levels of cognitive development (Snyder & Spreitzer, 1990).

Holloway (2002) reviewed literature that supports the notion that extracurricular activities, such as athletics, enhances the academic mission of schools. From the literature review, it was concluded that athletic participation reduced the probability of school dropout by approximately forty percent. Involvement in these activities appeared to support at-risk students by maintaining, enhancing, and strengthening the student-school connection. Holloway (2002) argued that educational decision makers should

disallowing participation for this reason may have a negative effect on the overall academic achievement of the students (Holloway, 2002).

Another study reexamined whether or not extracurricular activity participation protected against early school dropout (Mahoney & Cairns, 1997). These researchers conducted longitudinal assessments for 392 adolescents who were initially interviewed during 7th grade and followed up annually until 12th grade. They examined the relation between extracurricular participation and early school dropout, or the failure to complete the 11th grade. Interpersonal Competence Scale (Cairns, Leung, Gest, & Cairns, 1995) ratings from middle school teachers identified various configurations of boys and girls who differed in their social-academic competence. Results showed that the dropout rates among at-risk students were much lower for those students who had participated in extracurricular activities. The researchers posited that extracurricular participation decreased the tendency to drop out because it gave at-risk students an opportunity to create a positive and voluntary connection to the educational institution (Mahoney & Cairns, 1997).

Effects on Test Scores

Ralph McNeal (1998) examined the patterns of participation among students who participated in high school extracurricular activities using the nationally representative, longitudinal NELS (National Education Longitudinal Study) database. The NELS is a major longitudinal study sponsored by the National Center for Education Statistics (NCES) for the US Department of Education to provide data on student trends over time. Four waves of data were collected, beginning with eighth graders in 1988 and follow-ups occurring every two years thereafter (McNeal, 1998). McNeal (1998) used the data from

the first two waves of the NELS database and found that students with higher standardized test scores were more likely to participate in most extracurricular activities except athletics, cheerleading, and vocational activities. However, students with higher grades were more likely to participate in athletics, cheerleading, and vocational activities (McNeal, 1998).

Marsh and Kleitman (2003) used all four waves of the NELS database to examine athletic participation effects on growth and change during high school. They found that athletic participation benefited most of the Grade 12 and postsecondary outcomes that were used to represent the effects of schooling (i.e., school grades, coursework selection, homework, educational and parental aspirations, self-esteem, number of university applications, subsequent college enrollment, educational and occupational aspirations, and highest educational level) (Marsh & Kleitman, 2003). As in the McNeal (1998) study, athletic participation did not have a positive effect on standardized test scores. Again, there was a systematic pattern of more positive effects of athletic participation on school grades than on standardized test scores (Marsh & Kleitman, 2003).

Public Policy Considerations

Baines and Stanley (2003) compared scholastic athletic programs with academic programs in terms of achievement and found scholastic athletics to be "the last bastion of excellence in schools" (Baines & Stanley, 2003, p. 217). According to Baines and Stanley, teachers are often forced to teach to standardized tests to get the majority of students up to a minimal level of competence, arguing this has caused teachers to leave out a great deal of material in favor of test-taking strategies and repetitive review activities. Coaches, on the other hand, implement a system and expect all their players to

learn it or sit on the bench until they do. Baines and Stanley stated that, "although trendy educational theories such as constructivism are sweeping America's schools of education, as yet they have failed to show up on the playing field" (Baines & Stanley, 2003, p. 218). The authors asserted that most new theories are based on the idea that teachers should not really teach, but be available to facilitate student learning. Arguing that coaches tend to be more direct when students err in their thinking, Baines and Stanley stated coaches are not reticent about showing students exactly what needs to be done and how to do it. These authors also noted that the number of teachers instructing out of their fields continues to rise, whereas coaches tend to be a little more careful about whom they hire. They stated that "it is common for a football coach to teach history with absolutely no academic qualifications, but never has a history teacher unfamiliar with the game been hired as a football coach" (Baines & Stanley, 2003, p. 219).

Michael Burnett (2001) conducted a historical analysis examining the effectiveness of the No Pass/No Play Bill, legislation created to implement academic guidelines for student participation in extracurricular activities. Those in favor of the legislation argue that it will serve as a motivational tool and provide the incentive for students to "pull up" their grades. Those opposing the bill have focused on the positive effects of athletics, relying on statistical evidence demonstrating that participants in sports and other extracurricular activities earn better grades and demonstrate better attendance in school than non-participants (Burnett, 2001). When analyzing the statistics, Burnett found that half the participants had no unexcused absences from school and most never skipped a class, compared to over one-third and two-sixths of the non-participants, respectively. Further, students who participated in extracurricular activities were three

times as likely to achieve a 3.0 grade point average or more, and the student participants also were more likely to have aspirations for higher education. Burnett also found after the No Pass/No Play policy was implemented, the number of ineligible freshmen increased to four times the number of varsity athletes. In his commentary, Burnett noted that educators have long acknowledged that children learn best when they are interested, and extracurricular activities can be the driving force behind school attendance.

Over a three-year period, Roger Whitley (1999) collected data on 285,805 students from high schools across North Carolina. He used paired t-tests to determine if there were any differences in grade point averages and attendance between: a) athletes and non-athletes, b) black male athletes and non-athletes, c) white male athletes and non-athletes, d) black female athletes and non-athletes, and e) white female athletes and non-athletes. The data analyses revealed that the average GPA of the athletes was 22.66% higher than that of the non-athletes over the three-year period. Further, the athletes averaged missing slightly over a week (6.06 days) less than the non-athletes over the course of a school year. In the Whitley study, the average mean discipline referral rate for the athlete group was 30.51% compared to the average mean referral rate of 40.29% for the non-athlete group. Results also indicated that the mean dropout percentage for the athletes was less than 1%, while the mean dropout percentage for the non-athletes was just under 9%. Overall, Whitley's analyses of the data indicated that all of the athlete subgroups outperformed the non-athlete groups as a whole. While discussing the findings, Whitley recognized the tendency of schools to cut athletic programs to solve budgetary problems. He concluded that interscholastic athletics may be the solution to our nation's education problems, and expanding extracurricular activities may be the

cheapest means of improving academic performance and instilling socially acceptable values and norms.

Effects on Adolescent Development

In the late 1980s, Holland and Andre (1987) reviewed the literature on extracurricular participation and adolescent development. These researchers looked at five areas. They found that extracurricular participation was correlated with higher levels of self-esteem, involvement in political and social activities during young adulthood, improved race relations, feelings of control over one's life, lower delinquency rates, academic abilities and grades, and educational aspirations and attainments. Holland and Andre concluded that eliminating secondary education extracurricular programs for budgetary reasons did not take into consideration the empirically-based knowledge of the positive effects of these programs on adolescent development.

Eppright, Sanfacon, Beck, and Bradley (1997) reviewed the literature on the importance of athletics during childhood and adolescent development. These researchers found that the literature supports the notion that sports participation is a necessary area of study as a health issue and a preventative tool. They concluded that play and sports (athletics) enhances the physical, mental, and social development of students during childhood and adolescence. The researchers also stated that participating in athletics "encourages the development of leadership skills, self-esteem, muscle development and overall physical health" (Eppright et al., 1997, p. 71).

In a secondary analysis of data from a national longitudinal survey of American high school students sponsored by the US Department of Education, Spreitzer (1994) examined the relation between high school athletic participation and the subsequent

psychosocial development of students. The data was collected through student questionnaires (measuring social background and academic orientation), social psychological measures (such as self-esteem), and information taken from individual student files (such as test scores). Results showed that students who participated in varsity athletics had a higher socioeconomic family background, higher levels of cognitive ability as measured by standardized testing, higher levels of self-esteem, and higher academic grade averages. Students who dropped out of athletics were more likely to drop out of other extracurricular activities. Conversely, those who continued to participate in athletics were more likely to take on additional activities besides sports. Finally, according to the Spreitzer study, athletes were more likely to be in some type of educational institution two years out of high school, and athletic participants were more likely to obtain a baccalaureate degree within six years of graduation.

Eccles, Barber, Stone, and Hunt (2003) used the Michigan Study of Adolescent Life Transitions (MSALT) to link extracurricular involvement with positive youth development. The MSALT is a longitudinal study that began with a cohort of sixth graders drawn from 10 school districts in southeastern Michigan in 1983. Data was collected when the participants were in sixth grade, seventh grade, tenth grade, 12th grade, when most were 21-22 years old, and when most were 25-26 years old. Eccles and colleagues (2003) found that involvement in team sports promoted academic outcomes. Further results indicated the participants liked school better than non-participants at both the 10th and 12th grade levels. Participants also had a higher than expected 12th grade GPA, were more likely to attend college full time at age 21, and were more likely to graduate from college by age 25-26 (Eccles et al., 2003).

Effects of Athletic Participation by Gender and Race

Along with the differences between athletes and non-athletes, there also appears to be gender differences in athletic participation. In March of 2004, *Women's Health Weekly* printed an article about girls lagging behind boys in sports participation. The information came from a report from the Harvard Prevention Research Center on Nutrition and Physical Activity at the Harvard School of Public Health (HPRC) and the National Women's Law Center (NWLC). The report indicated that girls in Massachusetts consistently participate in less physical activity, arguing that the lack of participation deprives young women of the health, social, and emotional benefits of playing sports (Massachusetts Girls Lag Behind, 2004). Some of the key findings of the report included the following: 36% of Boston high school girls participated in one or more sports teams in 2001 compared to 55% of high school boys; and 50% of the state's high school girls participated in one or more sports teams in 2001 compared with 58% of the state's high school boys (Massachusetts Girls Lag Behind, 2004). The report addressed the disproportionate opportunities for girls to participate in sports, asserting that nonparticipation can lead to problems such as obesity and other health-related issues. The Massachusetts' report also found a) district failures to provide girls with teams, b) evidence of harassment of girls who played on boys' teams when no girls' teams were offered, c) more indication of poor facility quality for girls, d) a general lack of adequate uniforms for girls, and e) frequent scheduling of girls' games during non-prime-time hours (Massachusetts Girls Lag Behind, 2004).

While using a nationally representative database to examine the patterns of participation among students who participate in high school extracurricular activities,

McNeal (1998) found that girls have substantially lower rates of participation in athletic activities. He found that 66% of boys participated in athletics, where as only 46% of girls participated in the late 1990s (McNeal, 1998).

Tami Videon (2002) used data from the National Longitudinal Study of Adolescent Health (Add Health Project) to examine the differential effects of sports participation on educational outcomes by examining factors that predict sports participation, while explicitly exploring differences by gender. Overall results indicated that girls (participants and nonparticipants) had significantly better educational outcomes than boys. Girls had fewer unexcused absences, took more core courses, had higher GPAs, and had higher expectations to go to college. The gender by participation interactions indicated that the beneficial effects of sports participation on attendance and academic expectations was significantly less for females (Videon, 2002). After examining the main effects of participation in sports, the Videon results indicated that the beneficial effects of sports participation is nearly twice as strong for males then for the female athletes.

Kareem Anderson (1990) investigated the view that sports participation and unrealistic athletic aspirations can hurt the academic achievement and future success of African American Males. Thirty-three athletes and thirty-three non-athletes were given two sets of questionnaires to measure the effects of sports involvement on academic performance and future goals. The original hypothesis, that African American athletes were hurt by unrealistic aspirations, was not proved. Results indicated that these athletes spent approximately three times the amount of time playing sports as the non-athletes. Further, the African American athletes devoted the same amount of time doing

homework as the non-athletes. Finally, the mean cumulative grade point averages for both groups differed by less than one point.

Summary

Although there has been controversy as to whether or not athletic participation enhances or detracts from academic achievement, previous research provides evidence that athletic participation likely enhances academic achievement and may have positive effects in other areas. Previous research has shown that athletic participation is positively related to high self-esteem, interest in school, attendance rates, educational aspirations, and occupational aspirations. However, studies have indicated that standardized test scores have not been found to be positively connected to athletic participation. It is important to note that most of the reviewed studies were correlational or conducted by examining group differences; therefore, it is possible that better students participate in sports, not that athletic participation causes positive outcomes. Further, while studies indicate that there appear to be differences in the percentage of athletic participation according to gender, little research has been conducted to determine whether there are differential effects of participation for male and female students. Thus, further investigations into the effect of athletic participation for both male and female students are needed.

CHAPTER 3

Method

The purpose of this study was to examine the effects of athletic participation on academic achievement. To conduct this study, the district administrator from a public school district in northwest Wisconsin was contacted in the spring of the 2003-2004 school year. The purpose and nature of the study was explained, and the district agreed to participate.

Participants and Setting

The participating school district was a rural public school district serving the residents of three small communities, an American Indian reservation, and the surrounding rural area. During the 2003-2004 school year, the total student enrollment of 1,105 was comprised of 50.8% male students and 49.2% female students. The ethnic breakdown of the students was 91.7% White, 7.4% American Indian, 0.3% Black, and 0.6% Hispanic. No Asian students attended school in the district that year. Of the total district population, 41.1% of the students were eligible for free and reduced lunch. Less than 2% of the 4th, 8th, and 10th grade students from the district were exempted from taking the Wisconsin Knowledge and Concepts Examination (WKCE), and the district reported a 93.2% attendance rate and a 100% graduation rate that school year.

The data collected for the study consisted of the total number of sports participated in by each student, the 10th grade WKCE test scores, and the cumulative GPAs from students in the 10th, 11th, and 12th grades. The demographic data for the students are presented in Table 1. The participants consisted of students receiving general and special education services.

A total of 297 students participated in the study. Out of the 297 students, valid GPAs were obtained from 258 (86.9%) of the students, and WKCE test scores were obtained from 234 (78.8%) of the students. The majority of the students without test scores or GPAs recently transferred into the district or were absent during the WKCE testing periods.

Procedure

Data Collection

After obtaining permission from the school district, the athletic director obtained a list including the grade, gender, and ethnicity of all students in 10th, 11th, and 12th grades. The athletic director then recorded the total number of sports in which each student participated. School personnel then added the students' scores on the WKCE and their GPAs at the end of their 10th grade school year. After removing student names and coding the data, the school personnel submitted copies to the researcher.

WKCE scores

The scale scores (SS) for the WKCE Reading, Language Arts, Mathematics, Science, and Social Studies subtests were used in the study. Scale scores are calculated by applying sophisticated computational procedures directly to the pattern of student responses to the items. An average scale score was calculated for each student by adding the subtest scale scores and dividing by the number of subtests taken. This derived scale score was used as the criterion-referenced score in this study.

Data Analyses

The first research question addressed the relation of sports participation to student achievement as assessed by the Wisconsin Knowledge and Concepts Exam (WKCE). To

examine this relation, Pearson product-moment correlation coefficients were computed between the total number of sports in which students participated and their mean WKCE scale score. The test was 2-tailed, and a statistical significance level of .05 was used in analyzing the data.

The second research question addressed the relation between sports participation and student achievement as assessed by students' Grade Point Averages (GPAs). To examine this relation, Pearson product-moment correlation coefficients were computed using the total number of sports in which students participated and their cumulative GPA at the end of the 10^{th} grade year. Again, the test was 2-tailed, and a probability level of .05 was used to determine statistical significance.

The third, fourth, and fifth questions addressed the effect of gender and sports participation on student achievement. To examine these questions, a 2 by 2 multivariate analysis of variance (MANOVA) was conducted to determine whether student achievement differed according to whether or not they participated in sports and whether they were male or female. Further, univariate procedures were used to identify group differences related to each achievement measure, and a .05 significance level was adopted for the statistical analyses.

CHAPTER 4

Results

This chapter presents the results of the study to determine whether sports participation is related to students' WKCE test scores and/or GPAs. The results of gender differences between participants and nonparticipants in relation to WKCE test scores and GPAs are also presented. The results related to the research questions follow.

Research question 1: Is involvement in multiple sports correlated with student achievement as assessed by the Wisconsin Knowledge and Concepts Exam (WKCE)? Table 2 shows the Pearson product-moment correlation coefficient (Pearson r) between the total number of sports in which students participated (Totals) and their average WKCE scale score (WKCEAV). Results indicate that there was no significant relation between the number of sports participated in and the students' WKCE mean scale scores.

Research question 2: Is involvement in multiple sports correlated with student achievement as assessed by Grade Point Averages (GPAs)? As shown in Table 2, a significant positive relation was found between the total number of sports in which students participated (Totals) and student achievement as defined by GPAs. The correlation was significant at the .01 level.

MANOVA results, using Pillais' criterion, are displayed in Table 4. MANOVA results reveal that the combined measures of academic achievement, GPA and WKCEAV (WKCE mean scale score), were significantly affected by whether or not the students participated in sports, $F(2, 219) = 33.56$, $p = .000$. The results also indicate that there is a significant effect of gender on the combined measures of academic achievement, $F(2, 219) = 7.08$, $p = .001$. An interaction effect between the participants/nonparticipants and

gender was not established, $F(2, 219) = .50, p = .61$. These results indicate that the female students and the athletic participants were more likely to demonstrate higher levels of academic achievement as assessed by the combined measures of GPA and WKCE mean standard scores, and there were no differential effects on the participants' academic achievement levels according to gender.

To investigate the impact of each main effect on the separate measures of academic achievement, univariate analyses were conducted. Univariate results for the participants versus the nonparticipants indicate that the students' GPAs were affected by whether or not the students participated in sports ($F(1, 257) = 69.05, p = .000$). Univariate results also indicate that the students' WKCE mean standard scores were affected by sports participation ($F(1, 233) = 25.92, p = .000$). Both of these academic measures were higher for students who participated in one or more sports.

Univariate results also indicate that gender had an effect on the students' GPAs ($F(1, 257) = 17.43, p = .000$). Results indicate that the GPAs of the female students were significantly higher than the males, regardless of sports participation. However, univariate results indicate that gender had no statistically significant effect on the WKCE mean standard scores ($F(1, 233) = 2.77, p = .097$).

CHAPTER 5

Summary and Discussion

This chapter will include a discussion of the results of the study and general conclusions. Limitations of the study, implications for future research, and implications for practice in the area also will be addressed. Finally, a summary of the entire study will be provided.

General Findings

The purpose of this study was to determine whether athletic participation has a positive effect on academic achievement. The findings do not indicate that the total number of sports in which students participated was related to the students' WKCE test scores. However, results do suggest that the number of sports was positively related to students' GPAs. Further, there was no indication that the amount of sports participation was negatively related to the students' test scores. The findings of this study appear to be consistent with previous research. Marsh and Kleitman (2003) also found that there was a systematic pattern of more positive effects of athletic participation on school grades than on standardized test scores. A possible explanation for these results is that test scores are heavily focused on the academic skills of the student, whereas GPAs portray a bigger picture of the student in which organization skills, motivation, effort, and attitude can have an affect. Successful student athletes also require these attributes; however, highly intelligent students could perform well on tests even though they may lack the other skills that would create successful students and athletes.

When analyzing the affects of participating or not participating; regardless of the number of sports, participants performed better academically on the combined measures

of GPAs and WKCE test scores. This outcome contradicts Coleman's (1961) zero-sum model suggesting that students who put their energies into sports are less likely to pursue academic objectives and perform well in school.

The positive effect of sports participation on academic achievement also contradicts this study's correlational data indicating no significant correlation between the total number of sports participated in and WKCE test scores. These contradictory results seem to imply that although students who participate in sports are more likely to achieve at higher levels, increasing the number of sports participated in will not incrementally improve a particular student's GPA or WKCE test scores. Thus, it may be that it is not important that students participate in *many* sports, only that they do participate.

The finding that students who participated in one or more sports were more likely to exhibit higher levels of academic achievement is not surprising. As indicated above, participants tend to be motivated individuals who are willing to devote time and energy to extra activities. These same attributes can carry over to classroom performance, whether pertaining to test scores or everyday assignments. The more motivated a student is, the more likely s/he will be to devote the time necessary to perform well academically. These results are similar to those found when Marsh (1992) examined the effects of extracurricular activity participation on student growth and change during the final two years of high school. After analyzing standardized achievement and GPAs, Marsh's results suggested that extracurricular activity participation can increase a student's academic achievement. However, the results contradict Marsh and Kleitman's (2003)

findings that there was a systematic pattern of more positive effects of athletic participation on school grades than on standardized test scores.

This study's findings also indicate that academic achievement differs between males and females. Female students (participants and nonparticipants) had higher levels of achievement (as assessed by a combination of their GPA and WKCE test scores). These findings are consistent with Videon's (2002) results, which indicated that girls (participants and nonparticipants) were more likely to have better educational outcomes than boys. A possible explanation for these results may be that female students are more motivated and disciplined to perform well academically. Females also may find that performing well academically is more socially acceptable for their gender than for the males. Further, popular social roles for males may often include the rebellious student who devotes little, if any, time to academics.

The results indicated that students who participate (boys and girls) in one or more sports had higher WKCE scores. These findings may be related to the type of students who tend to participate in sports. Athletes are likely more motivated, disciplined, and competitive than the nonathletes. Similar traits are found in successful students as well. Whether high achieving students participate in athletics or whether sports participation produces high achieving students is not easily determined. As the results indicate; however, the traits are related. Similar to Marsh's (1992) findings, this study suggests participation is connected to higher academic performance as measured by standardized achievement and GPA.

Another finding of the present study indicated that females (participants and nonparticipants) were more likely to have higher GPAs, but not higher WKCE test

results. As stated earlier, GPAs portray a bigger picture of the student in which organizational skills, motivation, effort, and attitude can have a large effect regardless of overall ability or skills. Although many females possess these traits that help them achieve higher GPAs, they may not be high ability students who perform well on standardized tests. Although Marsh and Kleitman's (2003) findings pertained to athletes and not just females; their results were similar in that participating students achieved higher GPAs but not higher standardized test scores.

The present study indicated no differential effects according to gender and participation. In other words, girls were more likely to have higher achievement and participants were more likely to have higher achievement, but there was no interaction effect. These findings contradict Videon's (2002) results where gender by participation interactions indicated that the beneficial effects of sports participation on attendance and academic expectations was significantly less for females and twice as strong for males.

Limitations

There are five possible limitations of the present study. First of all, the study examined correlational data and group differences. Correlational research does indicate causation, and the group differences found in the study do not imply cause. Therefore, the results of this study cannot differentiate whether athletes perform better in the classroom or if good students tend to participate in athletics. Second, since the data was collected from a small rural school district in northwestern Wisconsin, it is difficult to conclude that similar results would be found in other regions. In more urban areas, for example, students may be more likely to specialize in one sport rather than become involved in several. Further, urban students may have more difficulty devoting the time

necessary to achieve success in academics and sports. As such, the variables associated with sports participation may be different for urban students. Third, extraneous variables, such as social economic status or marital status of the student's parents, could have affected both the athletic participation and academic achievement of the students in this study. Another limitation of this study is the impact of the district's Athletic Code on the scores of the participants and nonparticipants. Students are not allowed to participate if they receive an F grade, which leads to a lower GPA. These students are automatically placed in the nonparticipating group even though they may have preferred to participate. This policy may have skewed the data for the nonparticipants. Finally, the WKCE test scores used in this study were average scores calculated from the language arts, math, reading, science, and social studies scaled scores. Therefore, this study only examined WKCE test scores to students' overall performance, rather than indicating the specific subject where a student might have performed well. For example, a student could have scored very high in math and science, but lower in language arts and social studies. Thus, the total score may have been in the average range, but this averaged score may not provide a complete picture of the student's academic achievement. It is possible that participation in sports may have been correlated more strongly with a specific academic area such as science or reading.

Implications for Practice

Several implications can be drawn from the results of this study and the information provided by previous research. Educators can be confident that students who participate in sports are likely to exhibit higher levels of achievement than the nonparticipants. Thus, it is important that athletic programs be maintained and

encouraged. Also, there do appear to be gender differences in regards to both athletic participation and academic achievement. Therefore, different approaches with males and females may benefit any type of academic program.

Implications for Future Research

Results from this study indicate a need for future research. Although the present study considered students' gender, extraneous variables, such as attendance, social economic status, ethnicity, and parent's marital status, should be controlled as they likely have an impact on student academic achievement and participation rate. Also, the participants in the present study were in the 10^{th}, 11^{th}, and 12^{th} grades. Since academic achievement and athletic participation begin far before the later high school years, it would be beneficial to conduct longitudinal research starting with younger participants. Longitudinal research with controlled samples are needed to determine whether sports participation is simply related to, or causes, higher academic achievement. Finally, standardized testing has become a major component in our nation's schools, with scores determining retention or advancement into the next grade. Due to the significance of these tests, research should break down the scores into the specific subject areas to get a complete picture of the areas in which all students (athletes and non-athletes) tend to struggle.

Summary

The purpose of this study was to determine whether athletic participation at a small high school in northwestern Wisconsin was related to academic achievement as assessed by the students' WKCE test scores and grade point averages. Another purpose

was to determine whether the academic achievement of the athletic participants and nonparticipants were affected by gender.

The number of sports in which the student participated, the Wisconsin Knowledge and Concepts Exam test scores, the grade point averages, and the gender of 10th, 11th, and 12th grade students ($n = 297$) in a rural Wisconsin school district were examined. Pearson product-moment correlation coefficients and a multivariate analysis of variance (MANOVA) analyses were used to determine whether athletic participation was positively related to academic achievement and whether the academic achievement of the students were affected by their sports participation and gender.

Although results indicated no significant correlation between the number of sports participated in and their WKCE test scores, they did indicate a positive relation between the number of sports participated in and their grade point averages. Results also indicate that those who participated in one or more sports were more likely to have higher GPAs and higher test scores. Further, the female students had higher GPAs at the end of their sophomore year than the male students, regardless of whether or not they participated in sports.

Table 1

Student Demographic Data

Demographic	*n*	*Percentage*
Gender		
Male	139	46.8
Female	141	47.5
Grade		
10th	91	30.6
11th	110	37.0
12th	79	26.6
Ethnicity		
White/Caucasian	254	85.5
Black/African American	1	.3
Native American	22	7.4
Athletic Participation		
Participant	116	39.1
Nonparticipant	164	55.2

Table 2

Correlations of Total Sports Participation (Totals) with WKCE and GPA

	WKCEAV	GPA
Totals		
Pearson r	.056	.250**
n	108	115
Sig. (2-tailed)	.563	.007

* $p < .05$, two-tailed.

** $p < .01$, two-tailed.

Table 3

Descriptive Statistics for Participation and Gender

			Mean	*SD*	*n*
GPAs[a]	Participant				
		Male	2.88	.756	48
		Female	3.40	.545	60
		Total	3.17	.695	108
	Nonparticipant				
		Male	2.10	.955	61
		Female	2.41	.963	55
		Total	2.24	.967	116
	Total				
		Male	2.44	.954	109
		Female	2.93	.918	115
		Total	2.69	.965	224
WKCEAV[b]	Participant				
		Male	723.75	22.93	48
		Female	729.98	20.28	60
		Total	727.21	21.62	108
	Nonparticipant				
		Male	708.30	32.21	61
		Female	713.78	23.38	55

	Total	710.90	28.38	116
Total				
	Male	715.10	29.40	109
	Female	722.23	23.19	115
	Total	718.76	26.58	224

a. Cumulative GPA at end of 10th grade

b. Mean 10th grade WKCE state standard score

Table 4

Summary of Multivariate and Univariate Analyses

Source	*df*	Multivariate F Values	Univariate F Values	
			GPA	WKCE
Gender	1	33.56	17.43*	2.77
Participation	1	7.08	69.05*	25.92*
Gender x Participation	1	.50	1.86	.03

Note. *p < .05.

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