

AN EXAMINATION OF ATHLETIC PARTICIPATION AND ACADEMIC ACHIEVEMENT  
AMONG HIGH SCHOOL STUDENTS IN A MIDWEST, CATHOLIC HIGH SCHOOL

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by

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The undersigned, appointed by the dean of the Graduate School, have examined the dissertation entitled

AN EXAMINATION OF ATHLETIC PARTICIPATION AND ACADEMIC ACHIEVEMENT  
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presented by Bryndyn Crutcher, a candidate for the degree of doctor of education, and hereby certify that, in their opinion, it is worthy of acceptance.

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## DEDICATION

The support, love, and patience of my family were without question the driving forces behind completing this work. I would like to thank my children, Caelleb, Tia, and Trystyn, for sacrificing an immense amount of time with me, so that I could complete my doctoral degree and this dissertation. My hope for my children is that this process will be an encouragement to them as they strive to reach their goals and dreams in life. I would also like to dedicate this work to my loving wife, Taina, without whom I may not have completed this accomplishment. Her encouragement was desperately needed throughout the process, and her willingness to be a single parent while I was away working, motivated me to see this work through to the end. I cannot thank my wife enough for her unselfish love and support, and for the sacrifices she made so that I could complete this goal I have been striving to reach for many years.

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## ABSTRACT

This quantitative study was designed to examine whether there was a statistically significant difference in grade point average (GPA) between students who participated in school-sponsored athletic programs and nonparticipants in a Midwest, Catholic high school. Secondly, this study examined whether there were significant differences in the relationship between athletic participation and GPA based on type of sport (i.e., team sport or individual sport). This study utilized Astin's theory of student involvement, looking at the impact of student involvement on academic achievement. Data analysis was conducted by the researcher using regression analyses. The results of the study indicate that the difference in GPA of athletic participants compared to nonparticipants was found to be statistically significant. After data analysis, neither team sport only participant GPA nor individual and team sport participant GPA were found to be statistically different compared to individual sport only participant GPA. Limitations of this study include demographic representation, socioeconomic representation, location, and by the type of school studied. Based on the results of this study, the researcher concluded that participation in school-sponsored athletics at a Catholic high school is valuable to students. Thusly, schools should not only fund school-sponsored athletics, but school officials should also be committed to policies that increase access to, and encourage participation in, school-sponsored athletic programs.

## **CHAPTER 1: INTRODUCTION**

### **Background and Statement of the Problem**

Schools and school districts across the United States are receiving less funding than previous years (Oliff & Leachman, 2011; Williams, Leachman, & Johnson, 2011). Oliff and Leachman (2011) stated that 37 states received less state funding than the previous year, with 30 states dropping below their 2008 levels. Catholic schools are dealing with financial hardships as well, due to low enrollment and decreased contributions to the parishes that support the schools (Basquez, 2015; Brinig & Garnett, 2014; Roewe, 2012; Zech, 2016). Because of the decreases in funding, schools and school districts are constantly making difficult financial decisions. As funding decreases, these entities attempt to best allocate their remaining funds to areas that increase student performance and learning (Armental, 2011; Baker, Farrie, & Sciarra, 2016; Cavanagh, 2009; Kronholz, 2012).

In more recent years, to alleviate shortfalls in the budget or in anticipation of funding reductions, the trend has been for schools to cut athletic programs, music programs, and/or art programs (Armental, 2011; Cavanagh, 2009), or in the case of many Catholic schools, close or consolidate schools (Coday, 2005; Curtin, Byrd, & Rocchio, 2006). High schools in the United States appear to be eliminating extracurricular programs at a rapid pace in order to reallocate funds to other areas of the school budget (Cavanagh, 2009; Kronholz, 2012). Though Armental (2011) noted that the aforementioned funding cuts were typically made in an effort to keep academic programs funded, cutting extracurricular programs may have unintended academic effects.

High school administrators and teachers determine how to best prepare and support their students academically, often by encouraging attendance and engagement (Balfanz, Herzog, &

Mac Iver, 2007; Banerjee, King, Orazem, & Paterno, 2012). Research has found that students need a purpose, a reason to engage in school curriculum or to attend school at all (Anderman, 2002; Bryan et al., 2012). Extracurricular activities, such as athletics, choir, and band have been viewed as an incentive for students to perform at least to a minimal level academically, as typically a minimum GPA must be achieved in order to participate in extracurricular activities (Barnard, 2005; Callari, 2002; Fox, Barr-Anderson, Neumark-Sztainer, & Wall, 2010).

Involvement in extracurricular activities fulfills the student's need to feel accepted, builds self-confidence, and may be a powerful motivator for the student to work more diligently on academic studies (Guest & Schneider, 2003; Holland & Andre, 1987). In addition, Barnard (2005) found that providing student involvement opportunities may influence students to not only stay in school, but to work more diligently on their academics in order to be eligible to continue participating in the school activities. Researchers argue that cutting athletic, music, and art programs may have a profound impact on student learning and development (Holcomb, 2007; Miller & Coen, 1994). For example, it is stated in a 2013 College Board report that by cutting programs, students may be losing learning opportunities that transfer over to math, English, history, and science. Furthermore, according to Kronholz (2012), there is a positive link between extracurricular involvement and graduation rates.

While some schools are cutting programs such as athletics, a high school in Texas spent \$70 million on a new football stadium, which was right on the heels of another Texas school that built a \$62 million stadium (Gerber, 2016). Although these communities were generally in favor of the expense of building new stadiums, critics questioned if this was the best way for schools to spend money. Yearly, school districts in the United States may spend \$250,000 or more, depending on the size of the district, for their athletic programs (Cavanagh, 2009; Kronholz,

2012). As a specific example, the Columbia Public School district in Missouri has three high schools each with approximately 2,000 students and an alternative high school with less than 200 students. The annual allocation of athletic department funding for the three large high schools is over \$500,000 each (Columbia Public Schools, 2016). The funding is allocated for salaries of athletic staff and coaches, employee benefits, as well as supplies, equipment, and fees for athletic teams and school activities.

Nearly eight million students participate in high school athletics in the United States, and student athletic participation has increased every year for almost three decades (National Federation of State High School Associations, 2015). Reducing or eliminating athletic programs would give students fewer options for extracurricular involvement or no option at all. In order to determine whether the expense of school-sponsored athletics is justified, the influence of athletic participation on academic achievement in high school must be examined. The current study considered the relationship between participation in high school-sponsored athletics and academics.

Some studies have reported athletic participation and academic achievement to be unrelated (Melnick, 1992; Melnick, Vanfossen, & Sabo, 1988; Sabo, Melnick, & Vanfossen, 1993). For example, Melnick's (1992) found that athletic participation increased popularity among peers and was significantly related to lower dropout rates, but was generally unrelated to grades and standardized test scores. Yet other researchers found a potentially negative effect or no effect at all, such as Hauser and Lueptow (1978) who reported: 1) students who did not participate in school-sponsored athletics had a more prevalent increase in GPA than students who participated in school-sponsored athletics; and, 2) that athletes were better academically to begin with, but lost their academic advantage during the years of their athletic participation.

Still, other researchers found that students who participated in high school athletics showed significant improvements in academic achievement (Broh, 2002; Darling, 2005; Holland & Andre, 1987). Broh (2002), for example, found improvements in student self-esteem, time spent on homework, as well as an increase in both math and English grades. In addition, Marsh (1993) studied the last 2 years of high school, and found many positive effects (e.g., increased social self-concept, increased identification with school) for those who participated in athletics; with little negative effects. Finally, Boone-Ginter, Gimbert, Kuhlman, and Sawyer (1994), found that those who participated in athletics had fewer absences, higher graduation rates, and positive academic, behavioral, and social outcomes. Due to the many positive benefits of athletic participation reported in the previous studies, it is important to consider how students would be affected if access to school-sponsored athletic programs were limited. Thus, school administrators need to take a closer look before cutting funding to, or eliminating, these programs altogether.

Furthermore, there are many factors to consider when researching whether school programs and/or activities have a positive effect on academic achievement. As high schools can vary widely, research in diverse settings is important. High schools in the United States have many different distinguishing characteristics (i.e., size, location, demographic, magnet, charter, public, private), which may also be a factor. In order to find more focused results on specific school settings (e.g., Catholic high schools), continued research regarding athletic participation and academic achievement is necessary. Catholic high schools serve a large student population, and are not exempt from making difficult financial decisions (Polka, Litchka, Mete, & Ayaga, 2016; Roewe, 2012; Zech, 2016). According to a National Catholic Education Association report, there were 1,205 Catholic high schools in the United States in 2017, serving 569,395

students (McDonald & Schultz, 2017). Therefore, as Catholic high schools make difficult budgetary decisions, and given the lack of literature specific to athletic participation and academic achievement in Catholic high schools, the current study is a step towards addressing this gap.

This study also examined whether there were differences in GPA between those who participated in team sport programs as compared to those who participated in individual sport programs. As mentioned previously, some scholars have considered the correlation between athletic participation and academic achievement in high schools (e.g., Broh, 2002; Hauser & Leuptow, 1978; Marsh, 1993; Melnick, 1992); however, these studies did not address potential variations between students who participated in team sports (e.g., football, softball) or in individual sports (e.g., swimming, golf). Team sports are those in which it is necessary for multiple athletes to work together toward a common goal (i.e., baseball, softball, football, basketball, volleyball). Team sports are made up of a group of individuals cohesively working toward a common goal, where there is a shared responsibility for each member's success (Deutsch, 1949; Gillies, 2004).

Johnson and Johnson (1999), in discussing cooperative learning environments, state that group members who work as a cooperative group show greater success over students who work by themselves or students who are in competition with each other. Athletic participants in team sports perceive that their success cannot happen alone, which creates an environment where each athletic participant will actively assist each other to complete tasks and obtain goals (Carron, Bray, & Eys, 2002; Deutsch, 1949; S. L. Miller, 2009). Team sports capitalizes on the athletic participants desire to engage peers, express their desire to achieve, and encourages a sense of responsibility to assist the success of their peers (Darnis & Lafont, 2015; Gillies, 2004; Johnson

& Johnson, 1999). Furthermore, DinÇ (2011) found a positive correlation between participation in team sports and social self-efficacy among 11-13 year old participants, which Bandura (1997) defined as students being able to translate their goals into actions that both establish and maintain relationships in an academic or social environment. Due to the previously mentioned benefits of team sports, adolescents are encouraged to participate in team sports as a way to complete both physical and emotional development (DinÇ, 2011).

Individual sports are those in which an individual competes on their own behalf (i.e., wrestling, tennis, track, cross country, golf). Individual sport participants are generally self-focused and self-reliant (Kajbafnezhad, Ahadi, Heidarie, Askari, & Enayati, 2011). Cox, Liu, and Qiu (1996) found individual sport athletes to have higher levels of preparation because they cannot rely on teammates. While individual sport athletes had lower scores in motivation and control of anxiety as compared to team sport athletes, individual sport athletes did have higher levels of confidence (Kajbafnezhad et al., 2011). Although there are benefits to participating in individual sports, previous research has stated that training for individual sports should be practiced in groups in order to improve social development (DinÇ, 2011).

### **Purpose of the Study**

A National Catholic Education Association report issued in 2017, stated that more than 1,000 Catholic high schools operated in the United States, serving over 500,000 high school students and their families (McDonald & Schultz, 2017). Due to the substantial amount of students and families being served by Catholic high schools in the United States, the current study looked to determine whether there were school-sponsored activities, specifically athletics, which predicted higher GPAs for Catholic high school students as compared to students classified as nonparticipants. This quantitative study examined whether there was a significant,

positive correlation between athletic participation and academic achievement within a Catholic high school (9th-12th grade) in the Midwest. The current study also examined whether participation in a team sport program was a greater predictor of GPA as compared to participation in individual sport programs. The purpose of this study was to analyze data and report findings related to the research questions in order to provide more information for Catholic high school administrators, teachers, parents, coaches, students, and all others who are interested in the academic achievement of students in Catholic high schools. Another purpose was to show the value of school-sponsored athletic programs so that school officials would be mindful of the academic benefits before making decisions to reduce funding or eliminate athletics programs altogether.

### **Research Questions**

The specific research questions guiding this study are:

1. Do Catholic high school students who participate in school-sponsored athletic programs have higher total GPAs as compared to nonparticipants?
2. Are there significant differences in the relationship between Catholic high school athletic participation and GPA based on type of sport (i.e., team sport or individual sport)?

### **Theoretical Framework**

The current study utilizes Astin's theory of student involvement, most specifically discussed in 1984 and as further studied in 1993. Astin (1977) originally looked into student involvement to measure the impact of college on students. Because of changes in both higher education and college students after the 1970s, Astin (1993) revised his study to collect more recent and relevant data. The main purpose of his new study was to enhance understanding of how undergraduate students are affected by their college experiences.

Although Astin's research took place in the college setting, his theory has been previously applied to the high school level. For example, Wighting, Nisbet, and Spaulding (2017) examined the relationship between sense of school community and academic achievement among students who were juniors in high school, at three independent high schools. The authors cited beneficial educational outcomes that were supported by Astin's student involvement theory. Additionally, Steinfeldt and Steinfeldt (2010) cited Astin's (1993) research when examining whether athletic identity among high school football players predicted levels of gender role conflict, stating athletic identity aided in developing leadership skills, physical and emotional health, and the growth of interpersonal skills.

Astin (1993) researched student development at the collegiate level. He found that the environment created by faculty and students was important in the effectiveness of education. Astin also stated that the most important influence on student development were other students. The aforementioned research examined the effect student involvement had on the overall development of students, including the academic achievement of students who were highly involved. Astin (1984) suggests that highly involved students are those who devote time and energy to studying, spending time at school, participating in student organizations, and interacting with faculty and other students. Highly involved students are more likely to have greater academic success and remain in school, whereas uninvolved students are more likely to drop out (Astin, 1975, 1984). Furthermore, Astin (1984, 1993) found that the greater the involvement of students, the greater the amount of student learning and personal development. Therefore:

*Hypothesis 1. Student involvement in school-sponsored athletic programs at a Catholic high school has a positive impact on academic achievement, measured by GPA.*

Astin (1977) also suggested that different forms of involvement may lead to different developmental outcomes. For example, Astin (1984) found benefits (e.g., retention rates) of group membership for students involved in a social group (e.g., sorority, fraternity), athletic programs, Reserve Officer's Training Corps (ROTC) programs, honors programs, and research project teams with faculty and peers. Although Astin looked at these involvement opportunities at the college level, there are likely transferrable findings to the high school setting. Many high schools offer similar opportunities in school-sponsored athletic programs, Junior Reserve Officer's Training Corps (JROTC) programs, opportunities to enroll in honors classes, and research options both during the school year and in the summer. As Astin's research highlights the potential for academic benefits for students who were a member of a school-sponsored team or organization, this is also congruent with my second hypothesis.

*Hypothesis 2. Participation in Catholic high school-sponsored team sport programs will predict greater academic achievement (GPA) than participation in individual sport programs.*

### **Significance of the Study**

A high school education is an important investment in students' lives. Completion of high school affords opportunities to enter the workforce and/or the military. Academic success in high school can also open doors for admittance into post-secondary education opportunities (Castellano, Richardson, Sundell, & Stone, 2017; Hiss & Franks, 2015; Kirst & Venezia, 2001). Offering opportunities for students to become more engaged in their school has shown positive academic results (Anderman, 2002; Bryan et al., 2012). Therefore, it is important for school administrators and teachers to provide and support programs which promote academic achievement through school involvement.

This study is centered on the idea that school involvement, specifically athletic participation, contributes to academic achievement. When students have an opportunity to be involved in school activities, such as school-sponsored athletic programs, they form a stronger sense of connection to school (Fredricks & Eccles, 2006; Marsh, 1992; Marsh & Kleitman, 2003; Petress, 2005; Zaff, Moore, Papillo, & Williams, 2003). Furthermore, Bruner (1996) shared that through participation students learn how to relate, belong, and be identified within the school community. Involvement in school-sponsored athletic programs also allows students to obtain and build skills that are beneficial to them academically, such as time-management (Marsh & Kleitman, 2003), work ethic (Leeds, Miller, & Stull, 2007), self-esteem (Barber, Eccles, & Stone, 2001; Eccles & Barber, 1999; Mahoney, Cairns, & Farmer, 2003), and a stronger commitment to academic achievement (Marsh & Kleitman, 2003). Ideally, involvement draws individuals from the edges of the community and engages them within the community (Linehan & McCarthy, 2000). Students who are involved in school-sponsored athletic programs have likewise, shown a stronger connection to the school community, and have had positive learning outcomes (Fredricks & Eccles, 2006; Marsh, 1992; Marsh & Kleitman, 2003).

Furthermore, Catholic schools in the United States are struggling to keep their doors open (Basquez, 2015; Brinig & Garnett, 2014; Coday, 2005; Curtin et al., 2006). In the last 50 years, student enrollment in Catholic schools in the United States has been cut in half (Brinig & Garnett, 2014; Coday, 2005; Roewe, 2012). Roewe (2012) stated that the decline in student enrollment can be attributed to demographic shifts, a decrease in church affiliation, a more competitive educational marketplace, and financial constraints, with financial constraints weighing the most heavily. Zech (2016) stated that a decrease in affiliation with the Catholic church and low church giving by parishioners limits the array of services Catholic schools can

offer, and limits the parishes' ability to subsidize their schools. The financial shortcomings have caused schools to close, consolidate, or find other financial options to continue offering academic and extracurricular programs to their communities (Brinig & Garnett, 2014; Coday, 2005; Curtin et al., 2006).

Given the inconsistent findings of previous research in the area of athletic participation and academic success, and the aforementioned financial issues faced by Catholic high schools in particular, this study will examine whether participating in high school athletics influences academic achievement (i.e., total GPA) for students at a Catholic high school in the Midwest. The expectation is that the findings will be useful to school administrators, teachers, coaches, parents, students, as well as the community of people who support individual schools and who are all involved (to some extent) in decisions surrounding the funding of athletic programs. This is important as Holloway (1999) concluded that the benefits of programs, such as school-sponsored athletics, should be carefully evaluated when budget considerations are being made for schools and school districts. Finally, although this study is based on a Catholic, Midwest high school, the findings may be useful for broader contexts in terms of implications for policy and practice.

### **Design of the Study**

The data gathered for this study was a convenience sample collected from the administrative records of a Catholic high school in the Midwest. The high school served 760 students in 2013. The demographics of the school are 97% White and 3% minority (i.e., Hispanic, Native American, Asian, and African-American). Sixty-three involvement opportunities were available to the student population, 17 of which were athletic teams. The vast majority (88.7%) of the high school students in the class of 2013 participated in one or more of

the available extracurricular offerings, with 63.4% participating on one or more athletic teams. In order for students to participate in one or more of the offered programs, the athlete or their family is asked to either participate in a fundraiser or pay a participation fee.

In order to account for the benefits of participating in a school-sponsored program, data was analyzed to determine whether athletic participation, controlling for other school-sponsored activities, was correlated with academic achievement. The current study took a quantitative approach to observe whether Catholic high school students that participated on a school-sponsored athletic program had higher GPAs as compared to their nonparticipating counterparts. Multiple regression analysis was used in order to determine whether athletic participation predicted GPA. Furthermore, this study observed whether student involvement in team sport programs was a stronger predictor of GPA as compared to involvement in individual sport programs.

### **Limitations and Researcher Assumptions**

This study looked at data from a Catholic high school located in the Midwest. The sample analyzed in the current study does not result in findings that should be generalized to other high schools, but it does provide a framework that could be used for future research. The findings of this study are limited by demographic representation, socioeconomic representation, location, and by the fact that the school studied is a Catholic high school. Student race was not considered in the current study. Information on racial identity was not provided in the dataset, therefore racial identity was not accounted for in this study. Another limitation was that causal connections were not able to be determined as it was difficult to know if there were other predispositions which could have also influenced academic achievement (i.e., parental involvement, nutrition, previous knowledge, SES). Also, the research did not look at student growth, but looked at cross-

sectional information while controlling for prior academic achievement. Further research is necessary to determine whether the results of this study would be consistent in other school environments.

As previously mentioned, students who wanted to participate in athletic programs were asked to either take part in a fundraiser or pay an activity fee. This model could be seen as a limitation as both the fundraiser and participation fee could be viewed as a hardship for some families. In the current study, I do not have a way to account for this in the provided data. After speaking to an administrator at the Catholic high school, I was told that, to their recollection, there had not been a student who was unable to either participate in the fundraiser or pay the fee. The administrator went on to say that many of the students and/or their families went above and beyond what was expected of them in the fundraiser. Lastly, I was told that if there ever was a situation where a student and/or their family was unable to participate in the fundraiser or pay the fee, the school would work with the family as it is part of the school mission to serve families. Although this possible limitation is specific to this school, similar schools should consider the effects of a mandatory fundraiser or pay-to-play model for their schools as they may limit student access to school-sponsored athletic participation.

As part of this study, it is important to understand the researcher's connection to the study. I am a teacher with 19 years of classroom experience and a coach with more than 20 years of high school coaching experience. I spent 13 years as a teacher and coach at Catholic high schools. As such, understanding the significance of athletic participation and academic achievement is of professional value. School-sponsored athletic programs are viewed with high regard. I have been allowed to play the role of mentor, teacher, coach, parent, and observer of high school athletic programs and competitions. As someone who cares deeply for the success of

students, in and out of the classroom, I have had the opportunity to witness students who faced difficult challenges, battled adversity, enjoyed accomplishments, and worked toward achieving a goal.

Being a coach, teacher, and former high school athlete, I have a unique perspective regarding high school students and school-sponsored athletics. Coaching student athletes has given me the opportunity to observe improved self-confidence, strengthened work ethic, and determination to attain goals. I understand the importance of teammates working together toward a common goal, and how cooperation, attitude, work ethic, and drive all play a factor in finding success. Athletic participation has also been observed to be beneficial in developing and strengthening leadership qualities (e.g., commitment, loyalty, communication, respect, conflict resolution). As a classroom teacher, I observed athletic participants to have good time-management skills, show attention to detail, and to be more willing to engage in class discussions. Based on these observations, I believe that athletic participation has significant benefits which lead to greater academic achievement. Additionally, I have personal experience as a high school athlete. Many of the tools and skills learned in the classroom, and on the athletic field, have contributed to my achievements in high school, college, and career.

Due to my personal experience as a coach and former athlete, I have a biased opinion toward the benefits of participation in school-sponsored athletic programs. In order to mitigate potential bias from impacting the study, I used statistical analysis with data that was gathered by the school administrative office. Although I strongly believe in the benefits of athletic participation, the intention of the current study is to objectively collect and analyze data to determine whether there is any type of correlation between athletic participation and academic achievement.

## Definition of Terms

As this research focused on student involvement outside of the classroom, it is important to define extracurricular and co-curricular. According to Bartkus, Nemelka, Nemelka, and Gardner (2012):

Extracurricular activities are defined as academic or non-academic activities that are conducted under the auspices of the school, but occur outside of normal classroom time and are not part of the curriculum. Additionally, extracurricular activities do not involve a grade or academic credit and participation is optional on the part of the student. (p. 698)

Bartkus et al. (2012) defined co-curricular as an activity that requires participation outside of the classroom to meet a curricular requirement. Because this study focused on voluntary participation in school-sponsored activities in which the students did not have to participate to fulfill a curricular requirement, the term extracurricular was used.

Understanding who is a participant and who is a nonparticipant is also important. For the purpose of this study, a participant is any individual who voluntarily chose to engage in a school-sponsored athletics program that took place outside of typical instruction time. A nonparticipant is defined as a student who chose to only be at school for typical classroom instruction time, not taking part in any school-sponsored activity.

Academic achievement is mentioned throughout this study, and as such needs to be defined. For the purpose of this study, academic achievement was measured by student GPA. GPA is an academic measure on a 4.0 scale. All students who attended the Catholic high school in the current research were issued a GPA for each year they attended the school, as well as a cumulative GPA. The yearly GPA was used in this study to determine academic achievement amongst students.

In this study it was necessary to define the use of gender. Healey (2014) defined gender as the interrelationship between gender biology, gender identity, and gender expression. Sex on the other hand is defined as external genitalia, sex chromosomes, and internal reproductive structures (Healey, 2014). The research mentioned throughout this study used gender as a means of defining physical traits alone. For the purposes of this study, gender and sex were used interchangeably, sharing the definition of sex, given that the current study relied on data not collected by me, the researcher.

### **Summary**

Schools and school districts are constantly making difficult financial decisions. When funding decreases, schools and school districts search for ways to reduce their expenses. Recently, the trend has been for schools to cut school programs and activities. In order to address the research questions, this quantitative study examined how school-sponsored athletic participation at a Catholic high school related to academic achievement as measured by the students' total grade point average (GPA). This study was limited by factors such as demographic representation and socioeconomic representation not being included as variables, location, and that the school studied was a Catholic high school. The findings from this study may provide useful information for school administrators in the formation of funding decisions regarding school programs and activities. This study may also encourage teachers, school administrators, and other school leaders to promote and encourage student involvement in school-sponsored activities such as athletics.

## **CHAPTER 2: REVIEW OF LITERATURE**

The primary purpose of “No Child Left Behind” is to ensure all students achieve appropriate learning goals, in safe school environments, by well-trained instructors (Diorio, 2015). The reason for the legislation was to hold school districts responsible for meeting the learning needs of students and preparing them for future success. In order for the aforementioned to occur, students need to feel connected to their school and school curriculum; they need a purpose for attending school (Anderman, 2002). Offering students an opportunity to participate in school activities and clubs forms a stronger sense of connection to school and contributes to academic achievement (Fredricks & Eccles, 2006; Marsh, 1992; Marsh & Kleitman, 2003; Petress, 2005; Zaff et al., 2003). This literature review opens with a discussion of prior research on the relationship between school-sponsored extracurricular activities and academic performance, before leading into a specific discussion of participation in school-sponsored athletics and academic achievement. It is then important to explore what the literature has to say about academic achievement, and for this study, I am looking at high school GPA. Finally, I conclude this chapter with a more detailed discussion of the theoretical framework introduced in Chapter 1 – Astin’s (1984, 1993) theory of student involvement.

### **Extracurricular Involvement and Academics**

Attitudes regarding the importance of extracurricular activities in schools have changed over the past 40 years. In 1978, 45% of respondents reported extracurricular activities played an important role in schools. In 1984, the percentage dropped to 31%, increased to 39% in 1985, then reached 63% in 1997 (Rose, Gallup, & Elam, 1997). O'Brien and Rollefson (1995) found students who participated in extracurricular activities to be more engaged with their schools, and participation contributed to a more well-rounded educational experience. The authors also

reported that 50.4% of students who participated in extracurricular activities had no unexcused absences, 30.6% had a GPA of 3.0 or above, and 29.8% achieved the highest quartile on a math and reading assessment. This compared to nonparticipants where 36.2% had no unexcused absences, 10.8% had a GPA of 3.0 or over, and 14.2% achieved the highest quartile on a math and reading assessment.

The increase in positive attitudes toward extracurricular activities, which include school-sponsored athletics, was likely due to studies that surfaced in the 1990s (Lumpkin & Favor, 2012). For example, in this chapter I have discussed several studies from the 1990s/2000s in which extracurricular participation has been shown to positively influence school engagement (Balfanz et al., 2007; Fredricks & Eccles, 2008; Marsh & Kleitman, 2003; O'Brien & Rollefson, 1995), school attendance (Boone-Ginter, Gimbert, Kuhlman, & Sawyer, 1994; McCarthy, 2000; O'Brien & Rollefson, 1995), dropout rates (Eccles & Barber, 1999; Holloway, 1999; Mahoney & Cairns, 1997; McNeal, 1995), student behavior (Fejgin, 1994; Overton, 2002), and academics (Branch, 2003; Bryan et al., 2012; JacAngelo, 2003; Stegman & Stephens, 2000). As attitudes toward extracurricular activities have become more positive, it is appropriate to delve into prior research and examine what influenced this change.

According to Balfanz et al. (2007), school participation and engagement are predictors of academic achievement. Involvement in school sanctioned clubs and activities benefit students academically when students are engaged in existing practices which have been developed over time, while at the same time being allowed to contribute to communities of practice (Lave & Wenger, 1994; Linehan & McCarthy, 2000). Students who are involved in school-sponsored activities have had favorable academic outcomes on standardized tests and state proficiency tests (Kinney, 2008; Miller & Coen, 1994). McCarthy (2000) compared GPAs and school attendance

of extracurricular participants and nonparticipants in 16 high schools in Colorado's largest school district, finding that participants had significantly higher GPAs and school attendance than nonparticipants. Similarly, Branch (2003) found significant differences between the academic achievement of extracurricular participants and nonparticipants in a study of 1,100 students in a large metropolitan high school; extracurricular participants had the highest GPAs, followed by athletic participants as a subgroup.

Other researchers have had similar findings, and have encouraged educational leaders to promote and support student involvement in extracurricular activities. When researching whether extracurricular activities support the academic mission of schools, McNeal (1995) found that students who participate in athletics, academic groups, and art activities were less likely to drop out of school than those students who did not participate. Using longitudinal data for students in the 8th-12th grades, Zaff et al. (2003) found extracurricular participation was linked to higher levels of academic achievement over time. Corbett (2007) also found positive academic benefits associated with participation in extracurricular activities, and encouraged school leaders to get students involved in extracurricular activities. Similarly, Feldman and Matjasko (2005) found that structured extracurricular activity participation was linked to positive academic, behavioral, and psychological outcomes.

Furthermore, Bryan et al. (2012) used a national sample of more than 10,000 high school seniors to examine the effect of school bonding (i.e., attachment to school, attachment to teachers, school commitment, and school involvement) on academic achievement (as measured by math scores). The researchers' hypothesized that students who developed a connection to the school were more likely to have academic success, and one of their findings was that the more time students spent in extracurricular activities, the higher their academic achievement. Knifsend

and Graham (2012) looked at participants' (864 students from 11 schools) junior year participation in clubs, athletics, art activities, and leadership groups in comparison with academic engagement, school identity, and GPA. They found extracurricular involvement had a positive effect on academic achievement, as based on GPA. Finally, Darling (2005) studied students from six high schools, focusing on participation in school-sponsored extracurricular activities and adolescent adjustment in areas of alcohol consumption, drug use, grades, attitude toward school, and academic aspirations. Alcohol and drug use were not found to be associated with participation in extracurricular activities and students who participated in extracurricular activities were found to have more positive attitudes toward school, higher academic aspirations, and higher grades.

In terms of specific types of extracurricular activities, research has shown that involvement in music and art have a positive effect for students (Holcomb, 2007; Kinney, 2008; Miller & Coen, 1994). Holcomb (2007) stated that students who are involved in arts programs are more likely to be recognized for academic achievement, to participate in math and science fairs, be awarded for school attendance, win writing awards, and be elected to class office. Research has also shown middle school band participants' achievement test scores to be significantly higher than nonparticipants (Kinney, 2008). The benefit of musical activities and the fine arts may stem from non-academic needs being met. Music, both playing and listening, has been shown to help satisfy the emotional needs of adolescents (North, Hargreaves, & O'Neill, 2000). Petress (2005) states that those who play a musical instrument display self-discipline, self-confidence, dedication, teamwork, humility, and hard work. Strengthening and developing the aforementioned qualities are significant in academic achievement (Holcomb, 2007; North et al., 2000; Petress, 2005). However, although research historically has correlated

involvement in music-related activities and aptitude to other subjects, according to Madden et al. (2014) a cause-effect relationship has not yet been confirmed. The current study also explored participation in specific extracurricular activities, school-sponsored athletics, and the next section explores relevant literature on potential benefits and disadvantages of such participation.

### **Benefits and Disadvantages of Athletic Participation**

For many high school students, educational opportunities are not confined to the walls of a classroom. Over 7.7 million students choose to participate in one or more school-sponsored athletic teams (National Federation of State High School Associations, 2015) and student involvement in school-sponsored athletic programs may serve a purpose beyond physical activity. Former Supreme Court Justice Byron White (served 1962-1993) stated (as cited in Barron, Ewing, & Waddell, 2000):

Sports and other forms of vigorous physical activity provide educational experience which cannot be duplicated in the classroom. They are an uncompromising laboratory in which we must think and act quickly and efficiently under pressure and then force us to meet our own inadequacies face to face and to do something about them, as nothing else does...Sports resemble life in capsule form and the participant quickly learns that his performance depends upon the development of strength, stamina, self-discipline and a sure and steady judgment. (p. 409)

However, the research on the academic benefits of involvement in school-sponsored athletic programs has had differing results. The focus of this section is to discuss the disadvantages and advantages of athletic participation as reported in the extant literature.

### **Disadvantages of Athletic Participation**

Coleman (1961) stated that the time devoted to athletics, social life, and academics are in competition with each other. Therefore, following the zero-sum model, athletic participation would be acquiring time that could be used toward academic pursuits. Additionally, a study regarding Wisconsin high schools showed greater academic achievement of non-athletes than athletes over the entirety of the high school years (Hauser & Lueptow, 1978). Hauser and Lueptow (1978) also found that participants in high school athletics have an increased GPA over the course of their high school years, but the gain was not as substantial as that for the nonparticipants over the same time period. Additionally, Hauser and Lueptow found that time spent on athletic teams decreased the time students could have spent on academic endeavors, which hindered academic achievement.

Using the High School and Beyond data (U.S. Department of Education, 1987), several studies reported that high school athletic participation is generally unrelated to academic achievement (Melnick, 1992; Melnick, Sabo, & Vanfossen, 1992; Melnick et al., 1988; Sabo et al., 1993). Although Marsh (1992) refutes some of Coleman's (1961) claim that time devoted to athletics and academics are in competition with each other, Marsh (1992) did not find involvement in school-sponsored athletic programs to directly increase academic success. Likewise, previous studies have shown that differences in academic achievement between athletes and non-athletes are due to initial differences and cannot necessarily be attributed to athletic participation, or the lack thereof (Hauser & Lueptow, 1978; Stevenson, 1975). Lueptow and Kayser (1974) researched 3461 high school seniors in 20 public high schools and found no difference in grades between athletes and non-athletes. Years later, Hauser and Lueptow (1978) found that the correlation between sport participation and GPA were due to preexisting differences and that athletic participation had no effect on academic achievement. Playing high

school sports did not have a significant effect on academic achievement, neither in GPA nor standardized tests, although Marsh (1993) did find benefits to specific groups based on race, school population, and whether the students are inclined to attend a college or university.

Furthermore, athletic participation has been shown to have health risk factors, including the stress of athletic participation leading to problematic behaviors. Research has shown high school athletic participants to engage in more drinking and gambling as compared to their non-athlete peers (Geisner, Grossbard, Tollison, & Larimer, 2012). After collecting data on 653 high school seniors, 513 of which were athletes, Geisner et al. (2012) confirmed that athletes were more likely to engage in alcohol and gambling than the 140 students who did not participate in athletics. This is of particular concern as Foster et al. (2015) found high school students who gambled were more likely to have poorer academic achievement. Balsa, Giuliano, and French (2011) found a small, yet significant, drop in the GPA of male high school students who consume alcohol, and although the same was not true for female students, the female high school students who consumed alcohol did self-report academic difficulty. Likewise, Patte, Wei, and Leatherdale (2017) found high school students who began using alcohol or marijuana were less likely to attend class, turn in school work, value good grades, and achieve high marks as compared to their abstaining peers.

### **Benefits of Athletic Participation**

In contrast with some of the previous discussion, several studies found that participation in school-sponsored athletics may actually contribute to more positive behavioral outcomes. For example, after examining longitudinal data from a national sample of 10th grade students, Fejgin (1994) found that students who were involved in high school athletics had statistically significant higher grades and fewer discipline problems in school. Fejgin stated that athletic

participation may create a stronger bond between student and school, which may cause students to be more compliant to school rules. Overton (2002) also found athletic participants to have fewer discipline referrals, fewer absences, and they were more likely to graduate as compared to non-athletes. Thusly, better behavior may lead to greater effort in the classroom and higher grades.

Additional benefits of participation in high school athletics have also been reported in the areas of grades, course selection, amount of applications to colleges and universities, educational aspirations, enrollment in colleges and universities, and level of academic attainment (Holland & Andre, 1987; Mahoney & Cairns, 2003; Marsh, 1992; Marsh & Kleitman, 2003). Additionally, scholars have found lower dropout rates for at-risk students who have consistently participated in extracurricular activities, especially athletic participation, as compared to those students who did not participate (Mahoney & Cairns, 1997; McNeal, 1995). Furthermore, Eccles and Barber (1999) observed athletic participation to be associated with lower rates of high school dropouts and higher rates of university attendance, as compared to other school-based activities. Still, other research showed athletic participation reduced the probability of students dropping out of school by nearly 40% (Holloway, 1999; McNeal, 1995).

In a study including the National Interscholastic Athletic Association and the National Federation of High School Associations, research showed how athletic participation impacts GPA, absenteeism, and graduation rates (Boone-Ginter et al., 1994). Boone-Ginter et al. (1994) found that those who participated in high school athletics attained higher GPAs and a lower absence rate than nonparticipants. Finally, the researchers concluded that participants in school-sponsored activities have more positive academic, behavioral, and psychological outcomes as well as higher graduation rates. According to Marsh (1993), after controlling for background

variables and outcomes collected during sophomore year of high school, sport participation was positively related to educational aspirations, time spent on homework, lower absenteeism, and social and academic self-concept. Furthermore, Marsh and Kleitman (2003) stated that athletic participation has “had a favorable effect on school attendance, taking more demanding coursework, time spent on homework, social and academic self-concepts, parental involvement and expectations, educational aspirations during and after school, and pursuing higher education” (Marsh & Kleitman, 2003, p. 208), all of which are associated with higher academic outcomes. Finally, Holloway (1999) found that athletic participants had significantly higher GPAs in season than out of season.

While many of the studies I have referred to so far in this section were from the 1990s/early 2000s, there were three more recent studies that also compared athletic participation and academic achievement. To begin, Couch, Lewis-Adler, and Burton (2011) went a step beyond the benefits of athletic participation and academic achievement, and examined the effect winning programs have on the classroom success of not only the athletic participants, but the entire student body. This study focused on the academic benefits of all students in schools with winning high school football programs. However, findings showed no significant relationship between the winning percentage of high school football programs and academic success, although the study did find winning percentage and test scores to be positively related in large schools. Blevins (2015) examined the academic impact of athletic participation on at-risk high school students, finding that at-risk students who chose to participate in athletics were less likely to drop out of school than at-risk students who did not chose to participate in athletics. In the third of these more recent studies, Hwang, Feltz, Kietzmann, and Diemer (2016) used National Education Longitudinal Survey-88 data to examine the relationship between participation in

sports and educational attainment, controlling for SES, academic ability, and school size. Their research found participation in athletics to be associated to the formation of both academic and athletic identities, but only academic identity was found to be associated with later educational outcomes.

Furthermore, there were four related studies that were conducted within specific geographical and/or institutional contexts, as is the case in the current study (i.e., Midwestern Catholic high school). Stegman and Stephens (2000) researched the relationship between high school athletic participation and academic achievement at a high school in Omaha, Nebraska. The athletic participants were found to have higher class rank, overall GPA, and math GPA. Likewise, JacAngelo (2003) studied athletes and non-athletes from 10 public high schools in Florida. He found that athletic participants earned higher cumulative GPAs and higher test scores on the 10th grade Florida Comprehensive Assessment Test in reading and mathematics as compared to non-athletes. In a study of 131 high schools in North Carolina, Overton (2002) found that athletic participants had higher mean GPAs and mean testing scores in algebra and English as compared to nonparticipants. Overton's findings were similar to previous findings in a study by Whitley and Pressley (1995), who also compared athletes with non-athletes in North Carolina.

The recent research on the topic of athletic participation and academic achievement has limitations which need to be assessed. Couch et al. (2011) examined the academic benefits of all students at schools with winning athletic programs, but the research did not look specifically at the potential academic benefits of athletic participants. Whereas, Blevins (2015) examined the impact of athletic participation in one specific student group, at-risk students. Hwang et al. (2016), although their research study is current, used data that is more than 20 years old. As

views of athletic participation have seemingly changed a great deal over the past 20-30 years, it would be beneficial to look at more current data that reflects current views of athletic participation. These limitations, along with the specific geographic studies which examined multiple schools (JacAngelo, 2003; Overton, 2002), point toward the importance of continued examination of athletic participation and academic achievement.

### **Further Defining Academic Achievement**

In many high schools throughout the United States, academic achievement is measured by standardized test scores, SAT and ACT, as well as high school GPA. Along with GPA, a challenging high school curriculum can predict academic potential and college preparedness (Komarraju, Ramsey, & Rinella, 2013; Schmitt et al., 2009). Research has also shown that standardized test scores and high school grades cannot reliably predict academic performance in college as it is only one aspect of college readiness (Arnold, Lu, & Armstrong, 2012); likewise a student's involvement in school activities and associations is another measure of both college readiness and academic success (Bryan et al., 2012; Zaff et al., 2003).

GPA is an important measure of academic achievement for students who wish to continue their education after high school, in terms of both college admission and academic success in college (Burns, 2014; Hiss & Franks, 2015). In her *USA Today* article, Burns (2014) shares that standardized tests put minority students and low income families at a disadvantage, whereas GPA reflects the body of work of students over a 4 year period. Additionally, standardized tests have been found to not be easily accessible to lower income families, susceptible to coaching, and not as accurate in predicting future academic success as compared to high school grades (Crouse & Trusheim, 1988; Hiss & Franks, 2015; Perez, 2002). Furthermore, Hodara and Cox (2016) found high school GPA to be a stronger predictor of

college performance than standardized tests, and that the use of standardized tests alone resulted in the misplacement of college students in developmental coursework. Despite the current climate of grade inflation and varying quality of high schools, high school grades are the best predictor of first-year college performance (Perez, 2002), and high school records alone resulted in more accurate admission decisions than using high school records and the SAT (Crouse & Trusheim, 1988). As high school education is a contributor to college readiness (Castellano et al., 2017; Kirst & Venezia, 2001), focusing the current study on high school GPA as a measure of academic achievement was of value.

### **Theoretical Framework**

It is through involvement that students learn how to relate, how to belong, and how to be identified in a community (Bruner, 1996). The strength of involvement is that it pulls individuals into a community and engages them within the community (Linehan & McCarthy, 2000). Quay (2003) states that involvement allows the learner to be a more active part of the learning process. The learner's basis is found in their direct experiences and form concepts through actions (Davis, Luce-Kapler, & Sumara, 2000). "Learning is seen as a relational, not an individual, process" (Linehan & McCarthy, 2000, p. 437). Social constructionism regards learners as active participants in a social arena in which both the social construct and the individual influence each other (Quay, 2003). Thus, due to its strong ties with social constructionism, and in order to further explore the relationship between academic achievement and involvement in school-sponsored athletics, I will be utilizing Astin's (1984, 1993) theory of student involvement.

Astin (1984) defines student involvement as the amount of physical and psychological energy that a student devotes to the academic experience. Students who devote time to studying, who participate in student organizations and activities, who interact with faculty and other

students, and who spend a significant amount of time on campus are considered by Astin to be highly involved students. Astin describes uninvolved students as those who choose not to be involved in extracurricular activities, spend little time on campus, spend little time studying, and rarely has contact with faculty members and other students.

Astin (1993) collected information about student involvement through a longitudinal study, including a follow-up questionnaire which was completed by students in 1989-1990, where 57 different measures of involvement were identified under five general headings. These five general headings were:

- Academic involvement
- Involvement with faculty
- Involvement with student peers
- Work involvement
- Other forms of involvement

Academic involvement included the quantity of involvement in academic work. Involvement with faculty examined the number of hours per week spent with faculty outside of the classroom setting. Involvement with student peers was determined to be time socializing with friends and/or someone from another racial or ethnic group, having discussions on racial or ethnic issues, involvement in a student organization, working on group projects, and tutoring another student. Work involvement included hours per week working for pay and whether the job was on-campus or off-campus. Other forms of involvement included reading for pleasure, volunteer work, attending religious services, and exercising.

Astin (1984) recognizes that involvement has many definitions, with the meaning of involvement as either behavioral or motivational. Astin believes the behavioral aspects are

critical, and that how the individual behaves and what they do defines involvement more so than what they think or feel. Furthermore, Astin's (1984) theory of student involvement has five core claims:

- Involvement refers to the investment of both physical and psychological energy.
- Different students have different degrees of involvement, and the same student has different degrees of involvement at different times.
- Involvement contains quantitative and qualitative features.
- The amount of learning and personal development is directly proportional to both the quantity and quality of student involvement.
- An educational practice or policy's effectiveness is directly related to the practice or policy's ability to increase student involvement.

Finally, Astin (1984) also identified the following experiences as having the highest impact on persistence: 1) living environment, 2) classroom experiences, 3) guidance counseling or academic advising, 4) extracurricular activities, and 5) faculty involvement.

Astin's (1984) fourth claim is of the most interest to the current study as I explore the relationship between participation in extracurricular activities (specifically, school-sponsored athletics) and academic achievement (i.e., GPA). According to Astin (1975), undergraduate students who are involved in extracurricular activities, such as athletics, are more likely to remain in school. Furthermore, Astin (1984) stated that participation in sports has a pronounced positive effect on persistence in undergraduate education. Other scholars have also utilized Astin's theory of student involvement to explore how participation is related to academic achievement. For example, Artinger, Clapham, and Hunt (2006) discussed student involvement theory when determining whether there were social benefits to undergraduate students

participating in intramural sports. Weight and Huml (2016) cited Astin's (1993) research when discussing satisfaction with the college experience and motivation to earn a college degree for those who participate in intercollegiate athletics. Thus it is clear that Astin's theory of student involvement provides strong support for academic benefits for students who participate in school-sponsored athletic programs. Therefore:

*Hypothesis 1. Student involvement in school-sponsored athletic programs at a Catholic high school has a positive impact on academic achievement, measured by GPA.*

Although Astin's (1984) theory of student involvement, and the aforementioned findings related to athletics, was based on research on undergraduate students, it has been previously applied in a high school setting. For example, Wighting et al. (2017) discussed Astin's theory of student involvement when determining whether there was a relationship between sense of community and academic achievement in 11th grade students. In regards to high school athletic participation, Steinfeldt and Steinfeldt (2010) observed high school football players and noted Astin's (1993) research which found an athletic identity facilitates better physical and emotional health as well as the development of leadership skills. Astin's (1975) longitudinal study showed benefits to students who, like the aforementioned studies, were involved in school groups, organizations, and/or teams.

Astin (1984) mentioned students who were involved in school groups or activities with their peers (i.e., social clubs, intercollegiate athletics, and ROTC) were less likely to drop out of school. When students participated in school-sponsored student groups (e.g., student government), students were found to have frequent interactions with school peers and a more positive behavior toward school attendance. The foundation of being on a team is that when group members are put together in an environment where the perception is they cannot succeed

unless the entire group succeeds, the group members will actively work until their objective is accomplished and goal obtained (Deutsch, 1949). Students who are placed in structured groups, or teams, developed a stronger perception of group cohesiveness and responsibility for each other's success (Gillies, 2004). Astin also found athletic participants to have greater satisfaction with their school's academic reputation, friendships with other students, and the academic environment of their school. The aforementioned research has found student involvement, particularly in intercollegiate sports, to have a positive effect on persistence. Thus it is reasonable that Astin's theory of student involvement provides support for academic benefits to students who belong to student groups associated with the school. Therefore, I expect the following:

*Hypothesis 2: Participation in Catholic high school-sponsored team sport programs will predict greater academic achievement (GPA) than participation in individual sport programs.*

### **Summary of Prior Research**

In this chapter, I began by reviewing the extant literature on the relationship between extracurricular activities and academic performance, and more specifically, on the involvement in school-sponsored athletics and academic achievement. Next, I reviewed literature on the benefits and disadvantages of athletic participation. Over the past 40 years, attitudes have fluctuated over the importance of extracurricular activities in schools, with considerable increase in positive attitudes over the past 20 years (Rose et al., 1997). Furthermore, research regarding high school athletic participation and academic achievement has been somewhat contradictory. There are studies that have found athletic participation to have no benefit or to negatively affect academic success (e.g., Marsh, 1992; Otto & Alwin, 1977). While other research found high school athletic participation to be generally unrelated to academic achievement among minority

students (e.g., Melnick, 1992; Melnick & Sabo, 1992; Sabo et al., 1993). Yet other scholars such as Holland and Andre (1987) found involvement in high school athletics to show benefits in self-esteem, race relations, civic involvement, educational aspirations, and educational achievement. Likewise, other studies found that involvement in school-sponsored athletics while in high school benefitted students academically (e.g., Fejgin, 1994; Maloney & McCormick, 1993; Mangold et al., 2003).

I then focused on defining academic achievement for high school students, which was shaped by both access to data and previous research. Standardized tests have been considered disadvantageous (Burns, 2014), susceptible to coaching and an inaccurate predictor of future academic success (Crouse & Trusheim, 1988; Hiss & Franks, 2015; Perez, 2002). GPA has been found to be a more accurate predictor of future academic success (Crouse & Trusheim, 1988; Hiss & Franks, 2015), and the best predictor of first year college performance (Perez, 2002). Because high school education is a contributor to college readiness (Castellano et al., 2017; Kirst & Venezia, 2001), and as access to GPA data was accessible, the current study used GPA as the measure of academic achievement.

Finally, given the importance of continuing to discuss the relationship between school-sponsored athletic participation and academic achievement, the current study utilized Astin's (1984, 1993) theory of student involvement. Although Astin's research focused mainly on undergraduate students, there has been studies which used Astin's student involvement theory in the high school setting (e.g., Steinfeldt & Steinfeldt 2010; Wighting, Nisbet, & Spaulding, 2017). The current study focused on the effects of student involvement in school-sponsored athletic programs on academic achievement at a Catholic high school in the Midwest.

### **CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY**

When schools and school districts search for ways to reduce expenses, the trend has been to cut athletic programs, music programs, and/or art programs to alleviate shortfalls in the budget or in anticipation of reduction in funding to the schools or school districts (Armental, 2011; Cavanagh, 2009). Catholic high schools are making similar financial decisions (Polka et al., 2016; Roewe, 2012; Zech, 2016). The current study examined the athletic participation of students at a Catholic 9th-12th grade high school in the Midwest and how it related to academic achievement as measured by grade point average (GPA), and whether there were significant differences in the relationship between athletic participation and GPA based on type of sport (i.e., team sport or individual sport).

A number of previous studies have used large samples from either national data or data from multiple schools in order to examine the effect of athletic participation on academic achievement. Bryan et al. (2012) used data which included public, private, and Catholic high schools, where type of school was controlled for. Darling's (2005) sample included six California high schools, of which there was no mention of any of them being Catholic high schools. Knifsend and Graham (2012) used a large sample of Title I middle school students, which they followed into 140 high schools, although there was no mention of private or Catholic high schools in the research. While many of the large database studies include parochial schools, Catholic schools are not necessarily separated from other private, religious schools. Furthermore, studies which used large samples from national data or multiple schools have included and controlled for Catholic schools, whereas the current study examined a Catholic high school in isolation. Though previous studies have found large scale data sets to be beneficial to school decision makers when evaluating the benefits of extracurricular activities, such as school-

sponsored athletic programs (Barron et al., 2000; Broh, 2002; Ewing, 2007), these studies did not discuss results specific to Catholic high schools. So while there may be more generalizability in the results of studies which used national data, there is value in analyzing the data of one particular school as a unique case.

### **Setting and Sample**

The study was conducted using data collected from a co-ed Roman Catholic high school located in the Midwest. The following information about the Catholic school, in this section, is from the executive summary of the school's 2012-2013 accreditation report (president of school, personal communication, February 1, 2013). The Catholic high school is located in a county with a population of 77,000 people with a median age of 37. Demographically, the population is 84.2% White, 91.5% are high school graduates, and 31.5% have a bachelor's degree or higher. The average household income was \$67,786 and the median household income was \$55,258. The largest employers are state, county, and city government, and the medical field. The school is owned and operated by the local diocese and in 2013 served 760 students in grades 9-12. There were 47 teachers, 29 of which held a Master's degree or above, and 24 of the teachers were former graduates of the Catholic high school. The student/ teacher ratio was 16.1/1. The high school offers a college preparatory education to students in the city the school is located in and the surrounding area. The tuition for the 2012-2013 school year was \$4,350.

During the 2012-2013 school year, students from 20 different Catholic parishes attended the Catholic high school. A parish is a community of Christians entrusted to a pastor under the authority of the diocesan bishop (Catholic Church, 1999). Of the entire student body, 91.4% of the students were Catholic. The vast majority of Catholic students who attended the Catholic high school came from the four closest parishes. Fewer students attended from the more outlying

parishes as the local public schools were much closer to their homes. Of the 760 students, 398 were female (52.4%) and 362 were male (47.6%).

Convenience sampling, which is using readily available data (Mertens, 2005), was used as the school data was not overly difficult for the researcher to obtain. For this study, the Catholic high schools' graduating class of 2013 was selected as the sample. The sample included 184 students, 84 reported as male students (45.7%) and 100 reported as female students (54.3%). Although racial identity information was not provided in the dataset, racial identity information for the Catholic high school was available in an accreditation report. The sample of students included: 161 White, non-Hispanic students (87.5%); 7 Hispanic students (3.8%); 1 Native American student (0.5%); 9 Asian students (4.9%); 6 Black, non-Hispanic students (3.3%). Of the 184 students, 72% played on at least one school-sponsored athletic program, 58% of the student sample participated on at least one team sport program, 38% of the student sample participated on at least one individual sport program, and 18% of the student sample participated in a school-sponsored activity other than athletics. The student data included sex, athletic participation for each year in school (ninth grade-12th grade), participation in other school-sponsored activities for each year in school, and the GPA of these students from ninth grade to 12th grade. Although the choice of a convenience sample limits the generalizability of the findings, perhaps to only the research site and similar Catholic high schools in the Midwestern United States, there is value in exploring a unique case as mentioned previously (see rationale section).

### **Design for the Study**

For the purpose of this study, a correlational design and regression analysis was used. An advantage to correlation design is that it can show whether there is a relationship among

variables. Correlation design can also show strength and direction of relationships, which is beneficial to researchers in determining further investigation of the relationship. Another advantage is that correlations can be displayed in a manner that is easily interpreted. There are also disadvantages to a correlation design. Correlation does not provide conclusive reasons why the relationship exists. In other words, correlation does not mean causation. It is also possible that outliers could skew the results of a correlation, and there is a possibility of a relationship solely by chance. Regression, on the other hand, affords the ability to determine the influence of independent variables on the dependent variable. The ability to identify outliers is another advantage of regression analysis. A disadvantage to regression is that it assumes there is a linear relationship between the dependent and independent variables, which is not always the case. As regression looks at the relationship of the means, and means are not an all-inclusive descriptor of the variable, regression is likewise not a complete description of the relationship between variables.

The current study considered whether there was a relationship between athletic participation and GPA. A regression analysis was used to examine the student GPAs of those who participated in school-sponsored athletics as compared to nonparticipants. Nonparticipants were students who did not participate in any school-sponsored athletic programs. Data was gathered from a Catholic high school (9th-12th grades) located in the Midwest. The data included year in school, GPA, sex, and any school-sponsored activities participated in. As the outcomes were expected to be established purely on facts gathered and not influenced by the values of those who collected the data and/or performed the analysis, a post-positivist approach was used for this study.

Post-positivist research challenges the thought of absolute truth (Phillips & Burbules, 2000), recognizing there can be no claims of certainty when studying the actions and behaviors of human subjects (Creswell, 2009). According to Ryan (2006), post-positivist research can also be about problem setting, which is posing the right questions. Given my belief that the reduction and/or elimination of school-sponsored athletic programs could be harmful to the academic achievement of students, I posed the question, “Do Catholic high school students who actively participate in school-sponsored athletic programs have higher total GPAs as compared to nonparticipants in the student body?” In my experience as a teacher and coach I have observed students who participate in athletics to have very good time-management skills, a positive self-image, and self-confidence. These qualities appear to be related to involvement in athletics and they appear to be positive qualities in the classroom setting as well.

Additionally, if the data examined showed participants in school-sponsored athletic programs to have higher GPAs than nonparticipants, it would be beneficial to see if a certain type of sport participation was more beneficial (i.e., team sport participation and individual sport participation). Historical texts discuss the strengths of working together, “Two are better than one, because they have a good return for their labor: If either of them falls down, one can help the other up. But pity anyone who falls and has no one to help them up” (Ecclesiastes, 4:9-10). In a team environment students seek outcomes that benefit the group and achieve synergistic results, where the sum is greater than the individual parts (Johnson & Johnson, 1999). As a coach I have seen groups of student athletes come together and accomplish goals, which would have been a lot less likely if they were working as individuals and not a cohesive unit. Therefore, I also posed the following question, “Are there significant differences in the relationship between athletic participation and GPA, based on type of sport?”

Furthermore, Schratz and Walker (2005) state that the researcher's motivations and commitment to the research are both central and crucial. As the researcher, I do have a personal connection to the study. I am a high school teacher and coach, and as such I believe the work I do is valuable to my students. As I have committed 20 years of my life to both athletics and academics, my motivation is that what I do matters in the growth of my students: mentally, physically, socially, emotionally, and spiritually. A researcher using a post-positivist approach must investigate their epistemologies and know how it affects them (Ryan, 2006). In order to maintain objectivity and integrity, the following steps were taken: data was gathered by the administrative office of the school, data was transferred from the administration to the researcher, and a quantitative approach was performed using the data gathered from the administrative office of the Catholic high school. As quantitative research is used to test objective theories, examining the relationship among variables that can be measured (Creswell, 2009), a quantitative approach was appropriate.

### **Data Collection and Analysis**

As mentioned previously, data were collected from school records obtained from an online student information system through the administrative office of the school. Students' participation in school activities was included in the administrative records, so no other means was necessary to determine athletic participation in the sample. The researcher removed all student names before analyzing the data to ensure the confidentiality of the students.

Once the data was collected and entered into the statistical analysis program, variables were checked for any improper data inputs as well as any outliers that may skew the results. In order to assess the consistency of the data, a preliminary analysis was conducted on each variable. The preliminary analysis was conducted by recording descriptive statistics of the

variables of the study using SPSS. This study used multiple regression analysis in order to determine if there was a correlation between the independent variables and the dependent variable. In research question one, I examined whether the independent variable, athletic participation, predicted the dependent variable, GPA. Likewise, when approaching research question two, I examined whether team sport participation or individual sport participation was a stronger predictor of GPA.

As part of the data analysis, I utilized SPSS (Version 24.0; IBM Corp., 2016) to identify descriptive statistics and to perform correlation and regression analyses. The descriptive statistics offered an overview of the sample for the key variables included in the study: the dependent variable (GPA), and the independent variables of athletic participation and team sport participation or individual sport participation. Furthermore, both the student level and observation level were considered when computing descriptive statistics. The student level observed the 184 students in the sample. The observation level included GPA records of 184 students in their sophomore year, junior year, and senior year, offering 552 total observations. The covariates included previous GPA, sex, athletic participation, team sport participation, individual sport participation, other school-sponsored activity participation, and years in school: senior, junior, and sophomore (note that freshman year was not included because prior GPA was required as a covariate, and prior GPA for freshmen would come from the students' middle schools, which was not available). Through descriptive statistics, the mean, standard deviation, minimum, and maximum values of dependent and independent variables were recorded.

The main regression analysis was conducted to determine if athletic participation predicted GPA. GPA was the dependent variable, athletic participation was the independent

variable, and control variables were sex, previous GPA, and year in school. The previously mentioned regression analysis was represented by the following equation:

$$Y_1 = \beta_0 + \beta_1 \text{Athletic Participation} + \beta_2 \text{Is a Male} + \beta_3 \text{Is a Senior} + \beta_4 \text{Is a Junior} + \beta_5 \text{Previous GPA} + \beta_6 \text{Other Participation} + e \quad (1)$$

The intercept,  $\beta_0$ , represents the expected value on the outcome, current GPA, when all predictors are zero. In other words, the intercept would represent the expected GPA for a student who is a nonparticipant in athletics and other school-sponsored activities, female, and a sophomore. The coefficient,  $\beta_1$ , is the expected change on the outcome, current GPA, when the predictor, athletic participation, increases by one unit, holding all other predictors constant. Thus, it is the expected change in current GPA for an athletic participant, compared to a nonparticipant, holding sex, other school-sponsored participation, and student year constant.

A second regression analysis was conducted to determine if there was a statistically significant difference between the GPA of athletic participants in team sport programs and the GPA of participants in individual sport programs. The second regression analysis was represented by the following equation:

$$Y_2 = \beta_0 + \beta_1 \text{Team Sport Participation} + \beta_2 \text{Individual \& Team Sport Participation} + \beta_3 \text{Nonparticipant in Athletics} + \beta_4 \text{Is a Male} + \beta_5 \text{Is a Senior} + \beta_6 \text{Is a Junior} + \beta_7 \text{Previous GPA} + \beta_8 \text{Other Participation} + e \quad (2)$$

The intercept,  $\beta_0$ , represents the expected value on the outcome, current GPA, when all predictors are zero. The intercept would therefore represent the expected GPA for a student who is a participant in an individual sport program only, female, and a sophomore. The coefficient,  $\beta_1$ , is the expected change on the outcome, current GPA, when the predictor, team sport participation, increases by one unit, holding all other predictors constant. Thus, it is the expected

change in current GPA for an athletic participant in a team sport program only compared to a participant in an individual sport program only, holding all other predictors constant. The coefficient,  $\beta_2$ , is the expected change on the outcome, current GPA, when the predictor, individual and team sport participation, increased by one unit, holding all other predictors constant. This is the expected change in current GPA for an athletic participant in both an individual and team sport program compared to a participant in an individual sport program only, holding all other predictors constant.

### **Variables**

Student academic achievement was measured by high school GPA, on a 4.0 scale, and this served as the dependent variable. GPA can be measured based on total classes or core classes. The researcher used total GPA as the school requires religious instruction for all students and offers little discrepancy in elective courses. Athletic participation, team sport participation only, individual sport participation only, and individual and team sport participation were the independent variables. Sex, other school-sponsored activity participation, nonparticipation in athletics, and prior GPA were included as control variables. Previous GPA was coded as a GPA on a 4.0 scale. Previous GPA is the lagged dependent variable. As it was expected that the dependent variable, current GPA, was influenced by the students' previous GPA, the inclusion of the lagged dependent variable was appropriate. Wilkins (2018) states that although some research argues that using lagged dependent variables produces negatively biased coefficient estimates, using lagged variables can yield more accurate parameter estimates. Table 1 displays the coding for the rest of the aforementioned variables.

Table 1

*Coding of Variables*

Variable	Coding
Athletic participation	0 = no athletic participation 1 = participated on one or more athletic teams
Sex	0 = was not male 1 = was male
Team sport participation only	0 = did not participate in a team sport 1 = participated in one or more team sports
Individual sport participation only	0 = did not participate in an individual sport 1 = participated in one or more individual sports
Individual & team participation	0 = did not participate in individual and team sports 1 = participated in both individual and team sports
Nonparticipant in athletics	0 = did participate on an athletic team 1 = did not participate on an athletic team
Other school participation	0 = did not participate in any school activities 1 = participated in a school activity other than sports
Is a Senior	0 = was not a senior 1 = was a senior
Is a Junior	0 = was not a junior 1 = was a junior
Is a Sophomore	0 = was not a sophomore 1 = was a sophomore

## **Summary**

This was a quantitative study focused on the following research questions: Do Catholic high school students who participate in school-sponsored athletic programs have higher total GPAs as compared to nonparticipants; Are there significant differences in the relationship between Catholic high school athletic participation and GPA based on type of sport (i.e., team sport or individual sport)? The sample selected for this study were students from one graduating class of a Catholic high school located in the Midwest. Student data included current GPA, previous year GPA, sex, year in school, athletic participation, and other school-sponsored participation. Data collected from administrative records at the school were analyzed using descriptive statistics, correlations, and multiple regressions.

## CHAPTER 4: RESEARCH FINDINGS

Due to concerns over decreased funding, schools and school districts have been forced to find ways to reduce spending, while still meeting the academic standards set for the student population. Catholic schools are suffering financially due to declining enrollments, demographic shifts, and competition in the educational marketplace (Roewe, 2012). Catholic schools have had to search for alternative funding to continue offering academic and extracurricular programs to their communities (Brinig & Garnett, 2014; Coday, 2005). In the end, student-athletes (and those who would be interested in school-sponsored athletics) are those most affected when these programs are eliminated or when the families have to pay a fee to participate.

The purpose of this study was to research whether involvement in school-sponsored athletics provides an academic benefit (i.e., higher GPA). The current study had value in that it gave the Catholic high school results based on their data, which the school administrators could use to influence funding decisions and school policy. Furthermore, this study could be transferrable to similar institutions. School leaders of private schools, specifically Catholic high schools, could find the results of this study beneficial in not only funding decisions, but also in influencing parents, teachers, and administrators to encourage student involvement, especially in school-sponsored athletics.

The primary research question guiding this study was to determine whether students at a Catholic high school in the Midwest who participate in school-sponsored athletic programs have higher total GPAs as compared to nonparticipants. Secondly, this study considered whether there was a significant difference in the relationship between athletic participation and GPA based on type of sport (i.e., team sport or individual sport). Data was collected from their administrative records, including student information regarding GPA, year in school, sex, and

student involvement in school-sponsored activities, including athletics. I then analyzed the data using SPSS statistical software.

As a reminder, the sample includes 534 observation level data points, which represents one senior class of 184 students with the potential for participation during their sophomore, junior, and senior years. The following provides a breakdown of the data.

- **Participation.** 396 athletic participants and 151 nonparticipants (Of the 184 students, 147 students participated at least one of their final three years in high school, whereas 121 participated in each of their final three years in high school.)
- **Race.** Of the 184 students, 161 White, non-Hispanic; 9 Asian; 7 Hispanic; 6 Black, non-Hispanic; 1 Native American
- **Gender.** 289 females and 245 males (Of the 184 students, 100 females and 84 males)

In looking into the secondary research question, I considered whether participation in team sports or individual sports had a greater impact on the academic achievement of athletic participants. In order to get the most accurate picture, athletes were separated into three groups, those who participated in team sports only, those who participated in individual sports only, and those who participated in both team sports and individual sports. Table 2 shows the representation of student involvement in school-sponsored athletics programs at the Catholic high school.

Table 2

*Student Involvement in School-Sponsored Athletic Programs*

Involvement	Frequency
No Sport	156
Individual Sport only	79
Team Sport only	188
Both Team and Individual Sport	129
Total	552

**Descriptive Analysis Results**

The mean and standard deviation scores for the dependent variable, current GPA, and the variable, previous GPA, at the student level were analyzed. The means for the five binary variables are proportions. The student level of data represents 184 students in a graduating class from a Catholic high school. Of the 184 students 72% participated in a school-sponsored athletic program, 58% of students participated in at least one school-sponsored team sport program, 38% of students participated in at least one individual sport program, and 18% of students participated in a school-sponsored activity other than an athletic team. Note that only 183 students had a previous GPA, this is due to one of the 184 students transferring into the school for their senior year. The relevant descriptive statistics of the student level are presented below in Table 3.

Table 3

*Descriptive Statistics of Student Level*

	n	M	SD	Min	Max
Current GPA	184	3.41	.51	1.63	4.00
Previous GPA	183	3.34	.56	0.70	4.00
Is male	184	.46		0	1
Athletic participation	184	.72		0	1
Team sport part.	184	.58		0	1
Individual sport part.	184	.38		0	1
Other school part.	184	.18		0	1
Valid n (listwise)	183				

*Note.* Means for the binary variables are proportions.

Table 4 presents the descriptive statistics at the observation level. The observation level includes data of the individual students by year in school. The data described is similar to that in Table 3 with only slight differences due to different min values in the current GPA as well as more data points as the 183 students are observed in their sophomore, junior, and senior years in school, offering 534 total observations. Table 4 presents the relevant descriptive statistics at the observation level.

Table 4

*Descriptive Statistics of Observation Level*

	n	M	SD	Min	Max
Current GPA	534	3.42	.54	0.89	4.00
Previous GPA	534	3.35	.59	0.70	4.00
Athletic participation	534	.73		0	1
Team sport part.	534	.58		0	1
Individual sport part.	534	.38		0	1
Other school part.	534	.17		0	1
Senior	534	.34		0	1
Junior	534	.34		0	1
Sophomore	534	.32		0	1
Valid n (listwise)	534				

*Note.* Means for the binary variables are proportions.

In Table 4, Current GPA and Previous GPA are continuous variables, as they could represent any value between 0.00 and 4.00. The mean Current GPA for all observations was 3.42, with a minimum GPA reported at 0.89 and a maximum GPA at 4.00. Similarly, the mean Previous GPA was 3.35 with a minimum GPA at 0.70 and a maximum GPA at 4.00. All other variables in Table 4 are binary variables where a value was coded 1 if the observation was in the category and a value of 0 if it was not. Therefore, the mean values of the binary variables represent the proportion of data points that fall in the category. Table 4 also reports that observations by year were 34% senior year, 34% junior year, and 32% sophomore year, which was expected as the data observed was from a single graduating class being observed over these 3 years of their high school careers.

Correlations among the dependent and independent variables were examined. The correlation analysis was applied to the dependent variable, current GPA, and nine independent variables which included: previous GPA, sex, athletic participation, team sport participation, individual sport participation, other school-sponsored activity participation, senior year in school, junior year in school, and sophomore year in school. Table 5 displays the results.

Table 5

*Correlations Between Nine Variables and Current GPA*

	1	2	3	4	5	6	7	8	9	10
1. Current GPA	—									
2. Previous GPA	.79**	—								
3. Is male	-.22**	-.21**	—							
4. Athletic part.	.12**	.08	.03	—						
5. Team sport part.	.05	.04	.05	.73**	—					
6. Individual sport part.	.11*	.09*	.08	.48**	.07	—				
7. Other school part.	.14**	.18**	-.22**	-.08	-.03	-.03	—			
8. Senior	.11*	-.03	.00	-.05	-.04	.00	.00	—		
9. Junior	-.11*	.06	.00	-.05	-.04	-.01	.01	-.50**	—	
10. Sophomore	-.01	-.04	.00	.09*	.08	.00	-.01	-.50**	-.50**	—

Note. Correlations for the observation level of high school students ( $n = 552$ ).

\* $p < .05$ . \*\* $p < .01$ .

As can be observed in Table 5, athletic participation was correlated with current GPA at .12. This correlation is statistically significant at  $p < .01$ , which means that there is greater than 99% probability that the reported correlation will be true in the population and did not occur due to random chance. Other variables correlated with current GPA that are statistically significant at  $p < .01$  include: previous GPA, sex, and school-sponsored participation other than athletics.

Individual sport participation, senior year in school, and junior year in school are correlated with current GPA and are statistically significant at  $p < .05$ , which means that there is greater than 95% probability that the reported correlation will be observed in the true population.

**Research Question 1: Involvement in Athletics and Academic Achievement**

The first research question asks, “Do Catholic high school students who participate in school-sponsored athletic programs have higher total GPAs as compared to nonparticipants?” There were 534 data points collected from 183 students over their sophomore, junior, and senior years. Regression analyses were performed as I looked into research question 1. Table 6 displays the results of GPA regressed on athletic participation. There were no covariates used in this model, therefore the table shows the unadjusted differences between athletic participants and nonparticipants on GPA. The intercept is the expected current GPA of nonparticipants. The slope, 0.15, is the expected change in current GPA when the predictor, athletic participant, increases by one unit. The difference between GPA of athletic participants and nonparticipants was statistically significant at  $p < .01$ .

Table 6

*Linear Regression of Type of Student on Current GPA*

Type of Student	B	SE	<i>p</i>
Intercept	3.30	.04	.00
Athletic participant	0.15**	.05	.00
R <sup>2</sup>		.02	

\* $p < .05$ . \*\* $p < .01$ .

It was important to estimate the relationship between athletic participation and current GPA controlling for previous GPA, sex, and year in school. Table 7, displays multiple linear

regression results for the multiple regression model with GPA as outcome and previous GPA, sex, year in school, and participation in other school-sponsored activities as covariates. The intercept is the expected value on the outcome, current GPA, when all predictors are zero. Thus, the intercept (1.06) is the expected GPA for a student who is a nonparticipant in any school-sponsored activity, female, and a sophomore at a prior GPA of zero. The slope for athletic participation (0.07) is the expected change in current GPA when the student is an athletic participant, holding all other predictors constant. After controlling for previous GPA, sex, year in school, and other school-sponsored activity participation, the difference in GPA of athletic participants when compared to nonparticipants was found to be statistically significant at  $p < .05$ .

Table 7

*Multiple Linear Regression of Athletic Participation on Current GPA, Controlling for Previous GPA, Sex, Year in School, and Other School-Sponsored Participation*

Type of Participation	B	SE	<i>p</i>
Intercept	1.06	.09	.00
Prev. GPA	0.71**	.02	.00
Is Male	-0.08*	.03	.00
Is a Senior	0.09	.03	.01
Is a Junior	-0.12**	.03	.00
Other Participation	0.00	.04	.97
Athletic Participation	0.07*	.03	.04
R <sup>2</sup>		.66	

\* $p < .05$ . \*\* $p < .01$ .

The results examined in Table 6 and Table 7 display different information. Table 6 examined all athletic participants against all nonparticipants. Because there were no covariates, the table shows the unadjusted differences between athletic participants and nonparticipants on GPA, whereas Table 7 displays results where the previous GPA, sex, year in school, and school-sponsored participation other than athletics are controlled for them in the regression analysis.

### **Research Question 2: Impact of Type of Sport**

The second research question asks, “Are there significant differences in the relationship between Catholic high school athletic participation and GPA based on type of sport (i.e., team sport or individual sport)?” As a secondary focus, students involved in team sports were compared to students who participated in individual sports. As can be observed in Table 5, individual sport participation was correlated with current GPA at .11 and was statistically significant at  $p < .05$ . The correlation of team sport participation with GPA was not observed to be statistically significant at  $p < .05$ . Table 8, displays the unadjusted differences between team sport participants, and individual and team sport participants compared to individual sport participants on GPA. The intercept (3.53) is the expected value on the outcome, current GPA, when all predictors are zero. Thus, it is a student who is a participant in individual sport programs only. Upon looking at the regression results, there were no significant differences in GPA based on sport type.

Table 8

*Multiple Linear Regression of Type of Athletic Participation on Current GPA*

Type of Participation	B	SE	<i>p</i>
Intercept	3.53	.06	.00
Nonparticipant in athletics	-0.22**	.08	.00
Team sport only	-0.11	.07	.13
Individual and team sport	-0.06	.08	.41
$R^2$		.02	

\* $p < .05$ . \*\* $p < .01$ .

The difference between the GPA of team sport only participants compared to individual sport only participants was not statistically significant at  $p < .05$ . Likewise, the difference in the GPA of individual and team sport participation compared to individual sport only participation was not statistically significant at  $p < .05$ .

Table 9

*Multiple Linear Regression of Type of Athletic Participation on Current GPA, Controlling for Previous GPA, Sex, Year in School, Nonparticipation in Athletics, and Other School-Sponsored Participation*

	B	SE	<i>p</i>
Intercept	1.16	.09	.00
Previous GPA	0.71 <sup>**</sup>	.02	.00
Is Male	-0.08 <sup>**</sup>	.03	.00
Is a Senior	0.09 <sup>*</sup>	.03	.01
Is a Junior	-0.12 <sup>**</sup>	.03	.00
Other School Participation	0.00	.04	.99
Nonparticipation in Athletics	-0.10 <sup>*</sup>	.05	.03
Team Sport Participation Only	-0.04	.04	.35
Individual & Team Participation	-0.05	.05	.29
R <sup>2</sup>		.66	

\**p* < .05. \*\**p* < .01.

Similarly to the regression analysis for research question 1, Table 9 reports a multiple linear regression of type of athletic participation controlling for previous GPA, sex, and year in school. The intercept (1.16) is the expected value on the outcome, current GPA, when all predictors are zero. The predictors include previous GPA, sex, year in school, other than athletics school participation, nonparticipation in athletics, individual sport program participation, team sport program participation, and both individual and team sport participation. Thus, the intercept

(1.16) is the expected GPA for a student who is an individual sport only participant, female, and a sophomore with a prior GPA of zero. The slope for team sport participation only (-0.04) is the expected change in current GPA when the predictor, team sport participation, increases by one unit, holding all other predictors constant. After controlling for previous GPA, sex, year in school, and other school-sponsored activity participation, the difference in the GPA of team sport participants only compared to individual sport only participants, was not statistically significant ( $p = .35$ ). Likewise, After controlling for previous GPA, sex, year in school, and other school-sponsored activity participation, the difference in the GPA of individual and team sport participants compared to individual sport participants only was not statistically significant ( $p = .29$ ).

### **Summary**

With regard to research question 1, “Do Catholic high school students who participate in school-sponsored athletic programs have higher total GPAs as compared to nonparticipants?,” I found that students who are involved in school-sponsored athletics have significantly higher GPAs as compared to students who do not participate. I found there was a statistically significant correlation between athletic participation and current GPA,  $p < .01$  (Table 5). When comparing the GPA of athletic participants to nonparticipants, without using covariates, the difference was found to be significant at  $p < .01$  (Table 6). After controlling for previous GPA, sex, year in school, and other school-sponsored activity, the difference in GPA of athletic participants compared to nonparticipants was found to be statistically significant,  $p < .05$  (Table 7). The expected change in GPA converts to 0.13 standard deviation units, which when considering GPA on a 4.0, is moderate.

For research question 2, “Are there significant differences in the relationship between Catholic high school athletic participation and GPA based on type of sport (i.e., team sport or individual sport)?,” I found that there was a statistically significant correlation between individual sport program participation and current GPA,  $p < .05$ , and a significant correlation was not found between team sport program participation and current GPA (Table 5). After a regression analysis, neither team sport participant GPA nor individual and team sport participant GPA were found to be statistically significantly different compared to individual sport participant GPA (Table 9).

## **CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS**

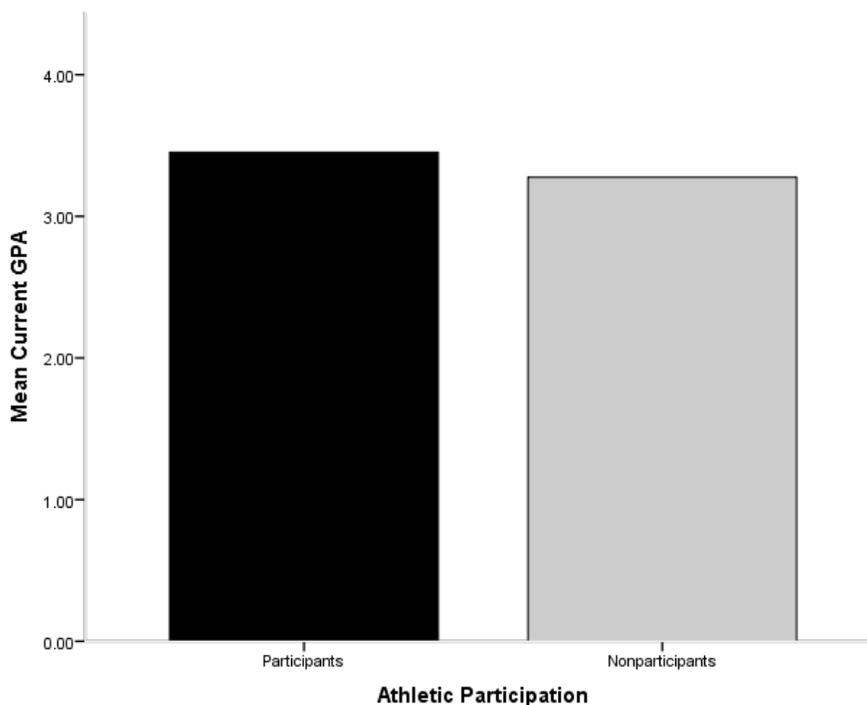
The purpose of this study was to determine whether involvement in school-sponsored athletics academically benefitted students at a Midwestern Catholic high school. Secondly, the study observed whether there was any difference between participating in team sports as compared to individual sports. As schools continually look for ways to engage students academically, as well as prepare students for post-secondary education or the workforce, a closer look is necessary when determining where funding cuts should be made. School officials, educators, parents, and community members who are engaged in student achievement should be looking to provide students with opportunities that maximize academic achievement. The more access high school students have to involvement opportunities, the less likely they will be to drop out of school, and students will have more options for success once they complete their high school education (McNeal, 1995). One such opportunity would be to support and encourage involvement in school-sponsored athletic programs (Boone-Ginter et al., 1994; JacAngelo, 2003; Stegman & Stephens, 2000).

### **Discussion**

Catholic high schools have an important role in the United States, as they serve over 500,000 students and their families (McDonald & Schultz, 2017). Catholic high schools hold themselves to offering an environment of academic excellence, emphasizing discipline and values, all centered through the formation of faith bolstered through student-teacher relationships. Taking it a step further, I agree with Cook and Simonds (2011) who state that the biggest impact of student lives in Catholic schools takes place in the human relationships, and that these relationships are key to the educational environment. I point out the importance of human relationships in Catholic high schools because a major component of the current study is

student involvement. As previously stated, human relationships are the biggest impact of student lives in Catholic schools, and as academic excellence is one of the points of pride for Catholic high schools, Catholic high schools should consider whether participation in their school-sponsored athletic programs benefits students academically.

The primary research question asks, “Do Catholic high school students who participate in school-sponsored athletic programs have higher total GPAs as compared to nonparticipants?” Based on my analysis of the data, participation in school-sponsored athletic programs on GPA was observed to be statistically significant for students at this high school. Upon examining the raw means, athletic participants were observed to have higher mean GPAs (3.45) as compared to nonparticipants (3.28) (See Figure 1)



*Figure 1.* GPA Comparison. This graph displays the comparison of the mean GPAs between students involved in school-sponsored athletics and nonparticipants.

Based on regression results of athletic participants and nonparticipants on GPA, as well as regression results of athletic participation on current GPA controlling for previous GPA, sex, and year in school, the current study found that the difference in GPA between those who participated in school-sponsored athletic programs and nonparticipants to be statistically significant (See Tables 6 & 7).

The findings of the current study are similar and consistent with previous research by Boone-Ginter et al. (1994), Broh (2002), Fejgin (1994), JacAngelo (2003), Lumpkin and Favor (2012), Overton (2002), Stegman and Stephens (2000), and Whitley and Pressley (1995). All of these previous studies found that involvement in school-sponsored athletics benefitted students academically. Similarly to the conclusions of Holloway (1999), school administrators, faculty, and all who are committed to students' academic achievement should support and encourage school-sponsored athletic programs, and these programs should be carefully evaluated when budget considerations are being made.

The secondary research question asks, "Are there significant differences between athletic participation and GPA based on type of sport (i.e., team sport or individual sport)?" I looked specifically at students involved in team sports and individual sports to determine if there was a difference in academic achievement between the two types of sports programs. First I examined whether there was a statistically significant difference between different type of sport participants and nonparticipants in athletics. Then, in order to determine if there was a statistically significant difference between the GPA of team sport participation and individual sport participation, a multiple regression analysis of type of athletic participation on current GPA controlling for previous GPA, sex, year in school, nonparticipation in athletics, and other school-sponsored participation was applied (Table 9).

After controlling for previous GPA, sex, year in school, other school-sponsored participation, and nonparticipation in athletics, I was able to determine if there was a significant difference between the GPAs of the different types of athletic participation (Table 9). There was no statistically significant difference between the GPA of team sport participation only and the GPA of individual sport participation only ( $p = .35$ ). Likewise there was no statistically significant difference between the GPA of individual and team sport participation and the GPA of individual sport participation ( $p = .29$ ). These results appear to be contrary to the hypothesis that high school students who participated in team sport programs would have greater academic achievement, GPA, as compared to those who participated in individual sport programs.

The alternate hypothesis was formed by the researcher's personal experience with coaching team sports, but also by research which discussed the importance of sense of community (Wighting et al., 2017) as well as studies which looked at specific team sports and the academic benefits of students who participated (Steinfeldt & Steinfeldt, 2010). Astin (1984) discussed the importance of being a member of groups and teams affiliated with the school. In the theory section I discussed teams having a stronger cohesiveness and responsibility for each members' success (Gillies, 2004), as well as groups and teams achieving synergistic results (Johnson & Johnson, 1999). As I looked at the difference between team and individual sports, my assumptions were that team sport participants had to work together whereas individual sport athletes were in competition with each other to accomplish their goals (i.e., only one wrestler per weight class or being the top 100m sprinter in track).

Upon further reflection on the findings of the current study, although individual sports do have the aforementioned internal competitions, there are also team sport characteristics (i.e., training together, offering encouragement, and a competitive environment that encourages the

athletes to work diligently at their craft) that could not be accounted for in this study. Likewise, team sports can also share some of my assumed characteristics of individual sport programs. For example, although there may be more positions to take part in (i.e., there are nine fielding positions in baseball and softball and 11 players are on the field in football), students are in competition with each other to earn a starting role. Another consideration is that the variable for individual sport participation in the present study may not have captured true individual sports. Individual sport programs in the high school setting typically include team sport aspects as well (i.e., tennis, golf, swimming, wrestling, and track & field have individual champions and team champions). Although athletes compete individually, they do acquire team points based on how they finish in their competitions. Also, tennis includes doubles, teams of two athletes competing together, and both swimming and track & field include relay teams, which are more similar to the qualities I previously mentioned for team sports. As I originally hypothesized that Astin's (1984, 1993) student involvement theory pointed to strengths in groups and teams, it may be that individual sports and team sports in the high school setting carry many of the same characteristics. Thus, there is not as much dissimilarity as I previously expected, and as such there are no significant differences found in the GPA of those who participated in team sports as compared to those who participated in individual sports.

In this study, and in previous research completed by Fejgin (1994), JacAngelo (2003), and Stegman and Stephens (2000), students who are involved in school-sponsored athletic programs have greater academic achievement, as measured by GPA, compared to students who are not involved in school-sponsored athletic programs. The highly involved student devotes their time around the school and school activities, which includes, but is not limited to, faculty and student interactions as well as student organizations and activities (Astin, 1984). Astin

(1984) found highly involved students to have a higher amount of student learning and greater personal development. The purpose of this research was to encourage school officials to consider the academic benefits of student involvement in school-sponsored athletic programs when making funding decisions. The current study along with previous research by scholars such as Bryan et al. (2012), Darling (2005), and Knifsend and Graham (2012), concluded there were significant academic benefits to student involvement. As student involvement in school-sponsored athletics has been determined to have a positive impact on academic achievement, opportunities for athletic participation should be viewed as a means of positively influencing academic achievement. In addition, the findings were meant to encourage school officials, educators, and school community members interested in student achievement to promote and encourage involvement in school-sponsored athletic programs. Therefore, school-sponsored athletic programs should be deemed academically important and impactful activities funded by the school.

### **Recommendations**

The aforementioned findings show that there was a relationship between academic achievement and student involvement in athletics. As the recent trend has been to eliminate or reduce funding to athletic programs and athletic departments (Cavanagh, 2009; Kronholz, 2012), these decisions may not only negatively impact athletic departments and opportunities for students to be involved in school activities, but may also negatively impact the academic achievement of students. Schools, and specifically Catholic high schools, should carefully consider the impact involvement in school-sponsored athletic programs has on the academic achievement of students before eliminating or restricting student involvement. What follows are additional practice, policy, and future research recommendations.

Catholic high schools should promote and recommend participation in school-sponsored athletic programs. Additionally, Catholic high schools should consider more opportunities for student involvement in school-sponsored athletics, whether it be interscholastic or intramural, in order to offer more access to their student bodies. As Catholic high schools seek to grow students in mind, body, and spirit (Cook & Simonds, 2011), they should continually examine their policies, procedures, and funding practices in order to best serve their students and their school mission.

As a teacher and coach, the findings of the current study are also of particular importance. Students who participated in school-sponsored athletic programs were found to have a higher GPA as compared to nonparticipants. As a teacher I am focused on learning as part of student growth. Based on the findings of the current study I am encouraged to promote student involvement in athletics for my students. By encouraging students to participate in opportunities that are tied to the school, I can expect more positive classroom behavior and enhanced academic achievement, and the students could expect an increase in GPA. As a coach, I am able to relay to my student-athletes that the time they commit to participating in athletics can not only add value to them as an athlete, but can also add value to them as a student. Therefore, as a classroom teacher and coach, it is appropriate for me to encourage, support, and promote student involvement in school-sponsored athletics.

As the current study furthers the case for academic benefits of athletic involvement, the issue of student access to athletic involvement opportunities needs to be addressed by institutions when at all possible. There are additional factors that could limit or exclude opportunities to participate in school-sponsored athletics, student level grades and finances; both of which can be addressed at the institutional level through policy changes. For example, many schools and state

athletic associations require a minimum GPA in order to be allowed to participate in school activities (Fox et al., 2010; Gehring, 2002; Joekel, 1985). Although this restriction is to encourage students to maintain a certain minimal level of academic attainment, other options should be considered. Policy changes may be necessary to offer students a chance to continue participating, possibly contingent upon future academic achievement. Another option that could open up opportunities for more students would be to implement an intramural program within the school. Students would then not be restricted by team size, ability level, pay-to-play fees, or their current GPA. An intramural program could also be adapted to student interests, which could reach beyond the school-sponsored athletic programs (i.e., ultimate Frisbee, archery, and target shooting).

Furthermore, schools should not only fund student involvement activities (e.g., athletic programs), but school officials should also be committed to policies that increase access to and encourage participation in student involvement in their schools. One such policy is the fundraiser/pay-to-play policy where families are asked to pay a fee in order for a student to participate (Bucy, 2013; Zdroik & Veliz, 2016). Zdroik and Veliz (2016) state that charging for previously free activities can limit student involvement opportunities for lower income families because the participation fee could be a financial struggle. In order for there to be increased access for more students, schools may need to find creative ways for funding. Corporate partnerships, grants, facility rentals, and community-wide fundraisers (i.e., silent auctions or gala) are all ways schools could increase athletic funding. If a pay-to-play model is considered necessary, schools could find ways to allow students to participate without paying the fees. For example, schools could implement a work study program, allow students to work as peer tutors, or allow students to be ambassadors for the school at school events. As findings showed athletic

participation to enhance academic achievement, schools need to think outside of the box when it comes to funding decisions and find ways to increase accessibility to school-sponsored athletic programs. Furthermore, future research should examine whether the fundraiser/pay-to-play model deters students and/or their families from any student involvement opportunities. Schools with these policies are encouraged to conduct similar assessments.

Although the current research study was consistent with my hypothesis that student involvement in school-sponsored athletic programs had a positive impact on academic achievement, measured by GPA, it would be beneficial to repeat this study in alternative school settings (i.e., locations, size of school, public schools). The focus of this research was to compare students involved in school-sponsored athletic programs with nonparticipants. Due to limitations in data, as well as being outside the scope of this study, further research could compare the academic achievement of students involved with school-sponsored athletics with students involved in specific school-sponsored activities (i.e., show choir, marching band, and jazz band) to determine whether there is a statistically significant difference between athletic participation and involvement in other school-sponsored participation opportunities on GPA. It may also be of interest to consider whether there is a difference in academic achievement between multi-sport athletes as compared to single-sport athletes.

Additionally, as the current study showed statistically significant differences between the GPA of athletic participants in school-sponsored athletics and the GPA of nonparticipants, it may be useful to compare student achievement data as well as student involvement data from schools that fully fund school athletic programs and schools that have limited student involvement opportunities. It would be imperative to also keep in mind that funding is not the only factor that limits student involvement in school-sponsored athletics. For example, student participation may

be limited due to space allowed on a team, the success of a team, and the skill level of the player (Seifried & Casey, 2012). For example, varsity level programs are expected to be competitive, so there is not often room on the team for all who wish to play. Relatedly, schools may not be able to offer certain athletic programs due to school size or interest in the sport, which reduces the percentage of student participation (Cohen, Taylor, Zonta, Vestal, & Schuster, 2007).

In regard to the differences in GPA between team sport participation and individual sport participation, further research should be considered. As individual sport participants appeared to have a higher GPA than team sport participants and both team and individual sport participants, additional research may be necessary to determine if there are significant differences, and why that may be. The internal drive and motivation of the individual athlete was not considered in the present study, but may be a factor in the difference between the GPAs of individual sport participants and team sport participants. Individual sport athletes tend to be more self-reliant and typically have more time for mental preparation than team sport participants (Kajbafnezhad et al., 2011). Students who participated in individual sport programs have also been shown to spend more time on homework, which may also contribute to a higher GPA (Marsh & Kleitman, 2003). It may also be beneficial to have a more focused definition of what qualifies a sport as an individual sport in order to have better clarification and consistency in future research studies.

Another recommendation is to include socio-economic status as a variable. Socio-economic status is an important predictor of educational performance (Hwang et al., 2016). Typically participants of individual sports, such as tennis, come from families with a higher socio-economic status (Martin, 2015). When considering the cost of some individual sports, such as tennis and golf, the cost of equipment alone lends these sports to be more accessible to families who have higher socio-economic status (Martin, 2015). As individual sport participants

appear to have higher GPAs than team sport participants, it may be of value to determine whether the difference in GPA is predicted by the type of sport or by the socio-economic status of the athletes who are participating. Including socio-economic status as a variable is also recommended to determine if pay-to-play policies and/ or mandatory fundraisers limit access to school-sponsored athletic programs. Although the Catholic high school in the current study required a fee or participation in a fundraiser for students who wanted to participate in school-sponsored athletics, I found that all students in the sample provided the fee or successful participation in the fundraiser. Other schools may find pay-to-play policies or mandatory fundraisers to limit access for students from families of lower socio-economic status.

As discussed, previous research was contradictory at times regarding the benefits of athletic participation, but this study is one more example of the benefits of athletic participation. As school administrators, educators, coaches, parents, and school communities continue to seek opportunities to improve student learning, it is important to continue the discussion of student involvement and, specifically, the potential benefits of athletic participation on academic achievement. Due to the diversity of schools, it is essential to conduct studies with unique cases, such as the single institution studied here. It is imperative for school administrators to have research findings available in order to make the best possible funding and policy decisions for their schools and the students they serve. The academic success of our students may not only affect the students' academic aspirations or workplace success, but may just as well affect our communities, cities, states, and country, as the student's transition into members of society.

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## VITA

Bryndyn Crutcher was born in Sacramento, California. He grew up with a strong influence in education and athletics. Bryndyn's parents were both teachers and his father was a high school football and baseball coach. Along with his parents, Bryndyn's Aunt Dottie was also a school teacher and school administrator. She was diligent in her studies and completed a doctorate later on in her academic career.

Bryndyn Crutcher's mother was a kindergarten teacher. Bryndyn was able to witness his mother's influence on her young students, and how she was able to inspire her students to learn. Even after retiring, she still continues to be in the classroom as a substitute teacher. Through countless observations of his mother teaching, Bryndyn's desire to work in education began to grow.

Bryndyn's father was a high school teacher and coach for nearly 20 years. As a young child, Bryndyn was able to see the admiration and respect the students and athletes had for his father. Although his father passed away when he was only 14 years old, he was able to witness how important the students were to his father, and how he was willing to do anything he could to help them grow academically and athletically.

Upon graduating from a math, science, and engineering high school, Bryndyn immediately attended college at Pepperdine University. During his sophomore year, Bryndyn was hired by the university as a full-time employee to supervise and maintain the academic computing labs while finishing his undergraduate education. In 1996, he graduated with a bachelor's degree in computer science and education. A year after completing his undergraduate degree, Bryndyn Crutcher was enrolled in a master's in public policy program at the newly

formed School of Public Policy at Pepperdine University. He completed his master's degree in 1999.

Following his graduation from Pepperdine University's School of Public Policy, Bryndyn was married and moved to Monroe, Louisiana. The move to Louisiana was the beginning of Bryndyn Crutcher's teaching career. Bryndyn began teaching at a private, Christian school in August of 1999, and has been in the classroom and coaching ever since. In 2002, Bryndyn moved to Missouri, teaching math at a small rural school district. In 2003, Bryndyn Crutcher began working for a diocesan, Catholic high school and remained at the high school until 2011, when he was asked to help start a new Catholic high school in the same diocese. In 2016, Bryndyn and his family moved to St. Louis to work for a Christian high school as a math teacher and coach. Currently, Bryndyn Crutcher is still teaching and coaching at the same Christian school in St. Louis and is now also serving as the school's Director of STEM.

Bryndyn took the time between his master's degree and beginning his doctoral studies to hone his craft of teaching and coaching, as well as focusing on his growing family. Bryndyn and his wife have been married for 19 years and have a son and two daughters. The family enjoys many activities and enjoy being active in their city, school, and church communities.

Through life experiences, Bryndyn Crutcher has found a passion for teaching and coaching. He has coached for over 20 years and has taught for 19 years. Bryndyn values learning and hopes to not only influence his students to be lifelong learners, but to model lifelong learning in his own life. Finally, Bryndyn Crutcher's family support and encouragement has aided in his learning as he could not have completed his doctoral journey without them.