Then Effects of High School Athletics Participation on Disciplinary Referrals and Grade Point Averages

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Abstract

This study investigated how athletic participation in a public high school influenced students' academic achievement and school conduct. Disciplinary referrals are increasingly on the rise in American schools and are a cause of concern for teachers, administrators, parents, and community members. School personnel currently devote significant effort toward implementing programs designed to curb discipline problems in the classroom. The method in this study analyzed grade point average and discipline referral data for high school students in a southeastern high school over a 3-year time period. Results from the study showed a significant difference between athletes and non-athletes in regard to disciplinary referrals and grade point averages. Results showed that athletes had significantly higher grade point averages and fewer discipline referrals when compared to nonathletes. Implications of the study suggest that athletic involvement in high school affects the student in a number of positive ways and ultimately produces stronger achievement and prosocial behavior.

Introduction

Student discipline, behavior, and violence have become major concerns in United States public schools over the past several decades. Discipline referrals and school suspensions have doubled throughout the U.S., and the frequency of in-school violence has reached unprecedented and alarming levels (Bianco, Dinkles, Kemp, Kena, & KewalRamani, 2009). Data from the National Center for Education Statistics show that school suspension rates have more than doubled since 1974, and in 2006, 3.3 million students received out-of-school suspension on at least one occurrence while 102,000 were expelled (Bianco et al., 2009). These misbehaviors not only impact the offending student, but can have a negative effect on other students, the school, and on the community as a whole. Thus, solving the problem of increasing discipline issues should be a concern for all members of the community (Barnes, Farell, Melnik, Miller, & Sabo, 2007).

Even in schools where violence is not statistically on the rise, the mass publicity of isolated incidents of campus brutality has fed into the perception that today's students are more aggressive (Fowler, 2011). According to Fowler (2011), these perceptions have made schools more punitive with increased policing and "zero tolerance" discipline. This has resulted in more students receiving discipline referrals than ever before.

Discipline problems account for a considerable share of lost time in the classroom setting. Current punitive discipline practices tend to increase negative behaviors instead of reducing them (Ross & Sliger, 2015; Shah, 2013). A negative self-perception of identity leaves students at increased risk for further antisocial activity, dropout, and even prison. Poor classroom behavior that does not pose a safety risk to students or educators still has a negative effect on the learning environment, since it distracts all students in the classroom, and forces teachers to focus more on classroom management than on delivering lessons. As a result, discipline problems impact academic achievement and student grade point averages (GPAs) (Bear, Doyle, Osher, & Sprague, 2010).

For many educators, effective discipline and academic achievement are the central goals of success in school. Participation in extracurricular activities is seen as one strategy in improving student success, since studies have shown that it results in lower dropout rates and an increased likelihood of college attendance among at-risk students (Eccles, Peck, Roeser, & Zarrett, 2008). Research has shown that students can reach their highest academic and behavioral potential by participating in socially acceptable activities that alleviate stress and promote relaxation (Bear et al., 2010). These studies suggest that encouraging students to take part in extracurricular activities and supporting their efforts may be one key in remedying discipline issues and promoting academic success.

Several other studies have found positive effects from school physical fitness activities. These studies found a direct positive relationship between students' academic achievement and physical fitness (Ayers, 2010; Castelli, Centeio, Hillman, 2012; Chomitz et al., 2009; Cottrel, Northrup, & Wittenberg*;* 2009). In general, it seems that adolescents are positively influenced by extracurricular activities with regard to improved discipline and GPAs.

The goal of this study was to examine academic achievement and disciplinary action in specific relation to school-based athletics. It did not examine other extracurricular activities like many prior studies, since the focus was to determine if participation in high school sports had an influence on the students' school behavior and academic achievement. Thus, data were examined over the course of 3 years from a large southeastern high school.

Table 1: Enrollment and Referral Numbers

Variable	2009-2010	2010-2011	2011-2012	Yearly Average
Enrollment	1,440	1,452	1,541	1,478
Referrals	2,831	2,735	1,872	2,479
Average Referrals per Student	1.97	1.88	1.2	1.68

The number of referrals by school year are listed in Table 1. The table suggests that there is an average of one to two discipline referrals per student per year. That figure, combined with enrollment, means the school is losing a significant amount of educational time due to discipline issues. For instance, a typical school referral requires teachers to fill out proper documentation, often in the middle of class, and to send offending students to administration to discuss their behavior. Students may also spend time in detention or suspension as consequence of their behaviors. Based on surveys conducted at schools across the nation, behavior issues and the requisite discipline responses are a significant cause of frustration in many schools, as they can monopolize many hours of time for students, teachers, and administrators (Negron, Simonsen, & Sugai, 2008). Researchers who conducted these surveys found that schools that eliminate large numbers of office discipline referrals can recoup 15¾ days of administrative time and students can save 79½ days of instructional time per year. Furthermore, it is estimated that an average discipline referral monopolizes 40 to 45 minutes of educational time in the classroom (Anderson, 2012).

It is speculated that sports help improve classroom behavior because students learn important life lessons, such as self-control, teamwork, and respect. Athletics have the ability to provide a venue for social adjustment, build character and psychological well-being, promote a sense of belonging and usefulness, and facilitate one to high values of citizenship (Brooks & Theoharis, 2012). Researchers posit that emotional health can, in part, come from "school bonding" that occurs when students stay involved with school peers and adults, through sports or other activities, as they feel a greater sense of belonging and a desire to be a positive member of the group (Cristini, Dallago, Nation, Santinello, & Scacchi, 2012). Moreover, other studies state that physical activity, such as participating in organized sports, can produce positive intellectual and academic benefits that last a lifetime (Rosewater, 2009). The overall data from these various studies support the common notion that sports participation provides adolescents with a variety of benefits beyond fitness.

Specific participation requirements my be an additional reason why some athletes are motivated to perform well scholastically. For example, school athletes often must maintain a minimum GPA, and maintain certain standards of conduct (Ayers, 2010). The practice of requiring athletes to maintain a minimum GPA gives educators the ability to use sports as a form of motivation to encourage positive behaviors and academic achievement. Not only does this motivate some athletes to perform better academically and behaviorally, but it also persuades some students who are at risk of dropping out to remain in school (Barnes et al., 2007).

Methodology

This study used a quantitative research design with a causal-comparative approach. Its purpose was to explore the relationship of athletics participation on student achievement and behavior. To accomplish this, we collected and analyzed school record data across a 3-year period between 2009 and 2012. These data included student population numbers as well as recorded referrals and GPAs for each student. Referrals were chosen as the means for measuring student behavior problems, since students typically only receive written referrals for relatively major discipline incidents, which are of primary concern when attempting to maintain an appropriate education environment. Teachers and administrators gave students a referral for behaviors such as fighting, bullying, blatant defiance towards a teacher, cheating, theft, drug use, accumulating and excessive amount of minor infractions (detentions). This referral practice corresponds to what occurs on the national level (Frank, McIntosh, & Spaulding, 2010). By focusing only on significant behavior problems that warrant a referral, and not on lunch detentions or other minor infractions, this study isolated which students (athletes or nonathletes) were responsible for the most disruptive types of behavior issues.

Another reason office discipline referrals were chosen as the method for gauging behavior was because they are a common form of intervention across all public schools (Irwin, Sprague, Sugai, Tobin, & Vincent, 2004). Because this practice is widespread and the data are kept for multiple years, future researchers can readily replicate this study at other schools. Other forms of intervention are not adequately standardized or recorded to be effective as a sound basis for study, whereas office discipline referrals are a valuable source of data since they are already collected, easily available, and cost-effective (Frank et al., 2010).

GPAs were chosen as the measure for academic achievement, since most schools keep GPA records, and they are an effective means to judge a student's scholastic efforts. A recent study found that a student's high school GPA was as good or better a predictor of college academic achievement than standardized tests, such as the SAT (Franks & Hiss, 2014). Out of the 123,000 students included in the Franks and Hiss (2014) study, there was no considerable difference in the college GPAs of students who were required to submit test scores for college entrance as compared to those who simply submitted their high school GPAs. Other research also indicates an individual's GPA is a strong predictor of academic success, even with the understanding that there are wide variations in curriculum and in how teachers award grades (Davy, Doolan, & Higgins, 2007). Likewise, a study conducted by researchers at the University of California, Berkley found that high school GPAs are consistently the best predictor of 4-year college outcomes (Geiser & Santelices, 2007). Thus, based on the current literature, there is strong evidence to support GPAs as a worthwhile index of high school academic achievement.

Setting and Sample

The sample for the study came entirely from a large southeastern high school. The school population averaged 1,443 students per year, of which approximately 79% were Caucasian, 8% were African American, 7% were Hispanic, 3% Asian or Pacific Islander, and 3% were of two or more races. The school has maintained an 18:1 teacher to student ratio, has a dropout rate of approximately 2%, and regularly scores slightly better than similar schools on standardized tests.

For each year investigated, data from the entire student population were gathered. Discipline referrals were counted for every nonathlete as well as for every athlete. Students who did not complete the school year or quit their sports team prematurely, other than for reasons of injury or illness, were not considered. Having all student data included in the study, and not merely a sampling of students, allowed for the largest sample size and therefore the most accurate conclusions for this particular school. This school was chosen strictly for convenience purposes, yet its average yearly population of 1,443 students was large enough to provide an adequate sample size for analysis even when considering the approximately 14.8 million students in US public high schools (Institute of Education Sciences, 2013). This conclusion was based on a standard sample size formula for infinite populations, which is appropriate when dealing with populations of 50,000 or more (Israel, 2013).

For this calculation, the *z*-value, or confidence level, was set at 95%, the *p*-value was 0.5, and the confidence interval was 4%. Based on these standards, the minimum sample size equaled 600, which was well below the study's average sample of 1,443 students.

GPA data were only used with high school senior students since the this high school only maintains a permanent record of seniors' GPA. Consequently, GPA comparisons between athletes and nonathletes were limited strictly to seniors. The sample size of seniors fell between 252 and 355 students, and while these numbers were not adequate to make nationwide conclusions, they were sufficient sample sizes to make reasonable conclusions. For instance, to maintain a confidence interval of 6%, which falls within an acceptable confidence range (Devore, Olsen, & Peck, 2011), the average senior student population was 226.3 for the 2009/2010, 2010/2011, and 2011/2012 school years.

The only outside participants in the project were school officials whose involvement was necessary for accessing and organizing school records, such as guidance personnel who were needed to acquire student population and GPA numbers. Similarly, the athletic director, who maintains lists of student athletes, was needed to accurately differentiate each student as either an athlete or nonathlete. School administrators and district superintendents granted permission to these school officials to access and provide these relevant data.

Data Collection and Analysis

School officials and guidance personnel provided the student data used in the study. These data listed all students from each school year along with information regarding their GPAs and discipline referrals. The office personnel then delivered the student GPA records to the school athletic director who designated each student, from all three school years, as either an athlete or a nonathlete. It was assumed all data provided from school personnel were accurate. Once the designations were made, the athletic director eliminated all student names from the list, so we only knew the students as either an athlete or nonathlete and never associated any of the data with an individual's name. This approach was necessary to protect the privacy of the students, to prevent bias, and to avoid associating any facts with a particular student's name.

We then determined the average number of discipline referrals for each group, athletes and nonathletes, as well as the average GPA for each group. This analysis was designed to provide evidence of any significant differences between athletes and nonathletes. The means for analysis were described by the following hypotheses:

Hypothesis 1: High school athletes will have higher GPAs than nonathletes.

H_0 There is no difference in GPA between high school student athletes and nonathletes.
H_1 There is a difference in GPA between high school student athletes and nonathletes.

Hypothesis 2: High school athletes will have less disciplinary referrals than nonathletes.

H_0 There is no difference in the number of disciplinary referrals between high school student athletes and nonathletes.
H_1 There is a difference in the number of disciplinary referrals between high school student athletes and nonathletes.

The acceptance or rejection of these hypotheses helped answer the overarching question of whether participation in high school athletics made a significant difference on student discipline referrals and grade point averages as compared to students who did not participate.

We assessed the hypotheses involving GPAs and discipline referrals using multiple *t*-tests to identify differences between athletes and nonathletes. We included every enrolled student for each year in the data to find the mean number of referrals for nonathletes versus the mean number of referrals for athletes. Similarly, the mean GPA for all senior athletes and nonathletes was calculated. Once the means were found for both groups in both variables and the standard deviations considered, we analyzed them for trends or patterns and evaluated their *p*-values. The group with numerically higher GPAs was considered to have significantly greater GPAs than its counterpart if the *p*-values were less than 0.05. This *p*-value is standard in most *t*-tests and is suitable for rejecting the null hypotheses (Wooldridge, 2012). For the same reasons, a group's behavior was judged superior if it had less referrals on average as compared to the other group and if the *p*-values were less than 0.05.

Results and Discussion

Based on the raw data, there were 932 nonathletes and 508 athletes in the school during the 2009/2010 school year. During this year, nonathletes received 2,663 referrals and athletes received 168 referrals, which equated to 2.86 referrals per nonathlete and 0.33 referrals for athletes. The average GPA for nonathletes was 3.176 versus 3.656 for athletes. When compared to each other, the athlete group had 2,495 less referrals than the nonathlete group and had GPAs that were an average of 0.48 points higher.

For the 2010/2011 school year, there were 941 nonathletes and 511 athletes. The nonathletes received 2,579 referrals and the athletes had 156 referrals, which equaled an average of 2.74 referrals per nonathlete and 0.31 referrals for athlete. Nonathletes earned an average GPA of 3.268 whereas athletes had an average GPA of 3.316. When compared together, the athletes had 2,423 less referrals than nonathletes and had slightly higher GPAs with an average of 0.048 additional points per student.

During the 2011/2012 school year, there were 1,007 nonathletes and 534 athletes. The nonathletes had 1,842 referrals and the athletes had 30 referrals, which resulted in an average of 1.83 referrals per nonathlete and 0.056 referrals per athlete. It should be noted that during the 2011/2012 year a new disciplinary intervention program was initiated, which consequently lowered the recorded discipline referrals for all students. This explains why the referral numbers were lower overall during that final year as compared to subsequent years. Nevertheless, that change did not compromise the data or the study, since all students were included in the intervention program, and both athletes and nonathletes experienced a reduction in recorded referrals. In the final year of analysis, both groups still presented contrasting data regardless of how the school chose to record referrals.

The average GPA for nonathletes during 2011/2012 was 3.061 and 3.618 for athletes. When contrasted with nonathletes, the athletes had 1,812 less referrals and an average of 0.58 additional GPA points. Discipline referral and GPA data for all three years are illustrated in Figures 1 and 2.

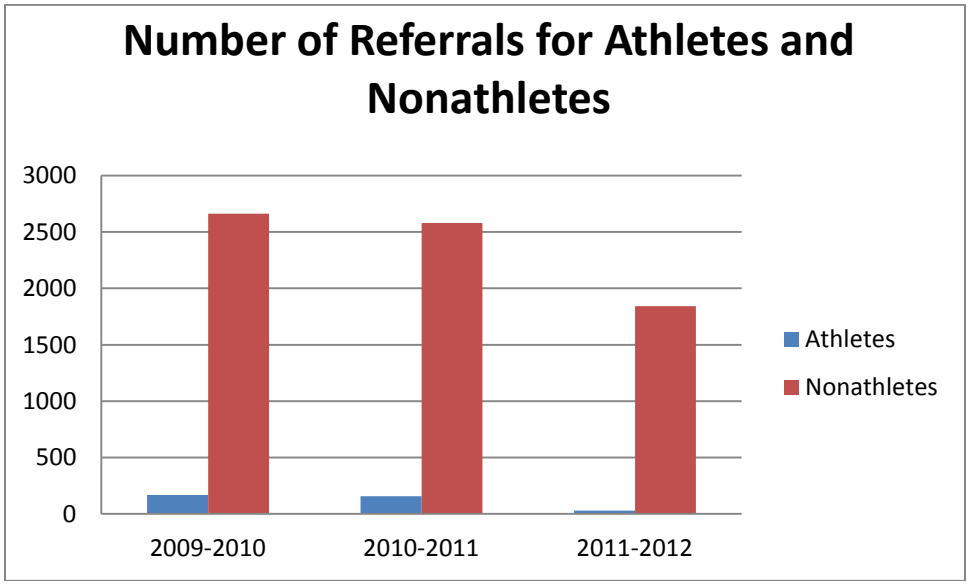

Figure 1. Comparison of referral numbers for athletes and nonathletes for school years 2009-2012.

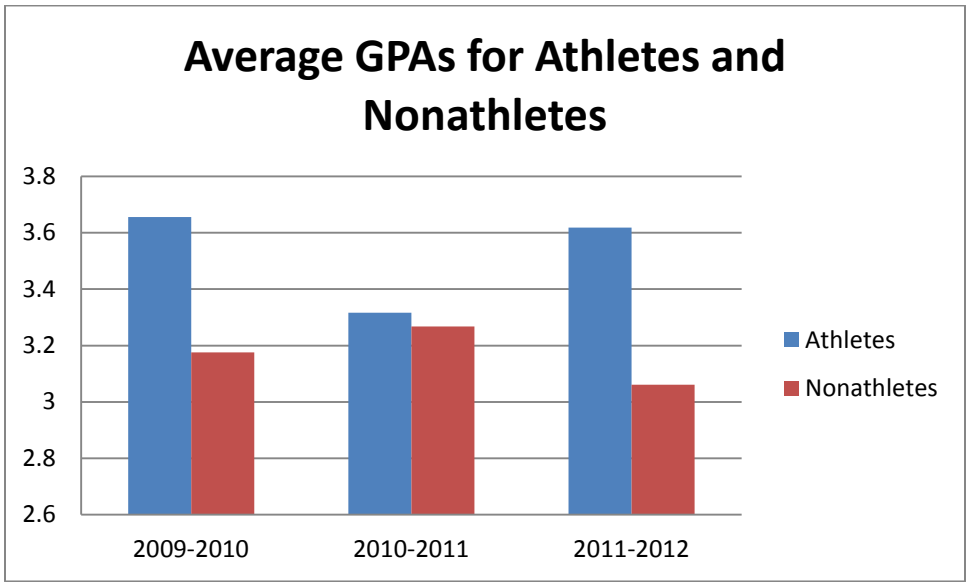

Figure 2. Comparison of average GPAs for athletes and nonathletes for school years 2009-2012.

According to the data, athletes had far fewer discipline referrals, and their GPAs were somewhat higher than nonathletes over the 3-year time span. An analysis of those three years is represented in the Figure 3, which shows consistent differences in terms of referrals for each year and slight, yet constant, differences in GPAs between these two groups.

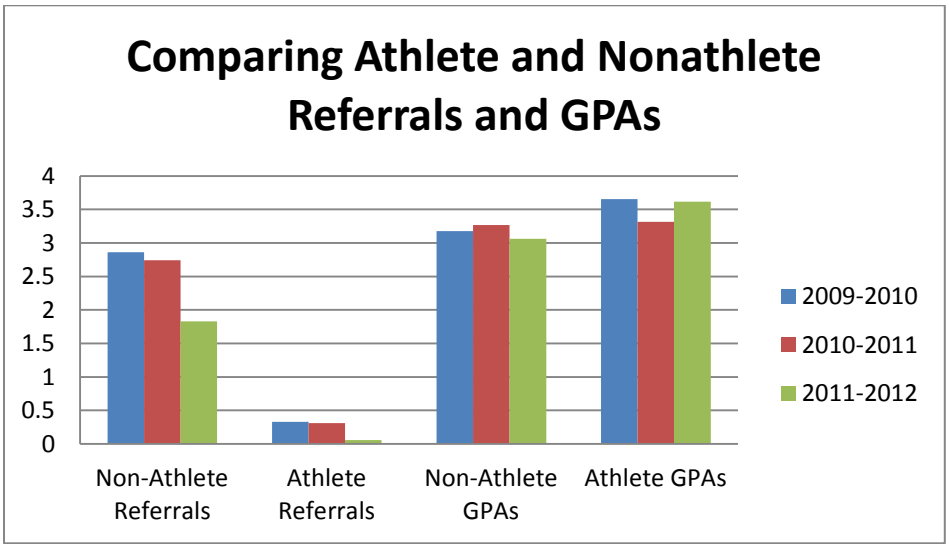

Figure 3. Comparison of average GPAs and average referrals per student for school years 2009-2012.

We used independent group *t*-tests to determine if the variations between the two groups were statistically significant. Test statistics were calculated and a *p*-value was determined. These data were analyzed and depicted in box plots, which are illustrated in Tables 2 and 3.

As displayed in Table 1, results for 2009/2010 showed a significant difference between nonathletes and athletes for the number of discipline referrals ($p<.001$). In 2010/2011 there was a significant difference between nonathletes and athletes for the number of discipline referrals ($p<.001$). Similarly, in 2011/2012 there was a significant difference between nonathletes and athletes in terms of discipline referrals ($p<.001$). For each of these school years, as shown in Table 2, athletes had lower amounts of referrals in comparison to the rest of the student population. In regard to GPA, results showed that in 2009/2010 athletes had significantly higher GPAs than nonathletes ($p<0.001$). In 2010/2011 there was not a significant difference between athletes and nonathletes for GPAs ($p = 0.673$). In 2011/2012, athletes had significantly higher GPAs than nonathletes ($p<0.001$).

Table 1: Referral t-Test Results for Athletes and Nonathletes

Type of Student	*Mean*	*Standard Deviation*	*Standard Error Mean*	*p-value*
Nonathlete 2009-2010	2.68	4.3	0.14	$p<0.001$
Athlete 2009-2010	0.33	1.38	0.061	
Nonathlete 2010-2011	2.74	3.91	0.14	$p<0.001$
Athlete 2010-2011	0.31	1.58	1.58	
Nonathlete 2011-2012	1.83	3.23	0.1	$p<0.001$
Athlete 2011-2012	0.056	0.368	0.016	

Table 2: GPA t-Test Results for Athletes and Nonathletes

Type of Student	*Mean*	*Standard Deviation*	*Standard Error Mean*	*p-value*
Nonathlete 2009-2010	3.176	0.828	0.056	$p<0.001$
Athlete 2009-2010	3.656	0.732	0.078	
Nonathlete 2010-2011	3.268	0.835	0.059	$p=0.673$
Athlete 2010-2011	3.316	0.701	0.097	
Nonathlete 2011-2012	3.061	0.885	0.054	$p<0.001$
Athlete 2011-2012	3.618	0.777	0.084	

In summary, the data analyses show that athletes had notably higher GPAs than nonathletes for all 3 years. Also, it is reasonable to assume that, overall, the athletes had significantly higher GPAs than nonathletes, since the athletes had *p*-values of less than 0.05 for 2 out of the 3 years.

There is much speculation about the role of athletics on student development, but there is a lack of conclusive, empirical evidence to support whether or not participation in school-sponsored athletics influences behavior and academic success. The aim of this study was to quantify the impact athletics has on GPAs and discipline referrals. Results from this study demonstrated that athletes had significantly less discipline referrals, for all 3 years, and had higher GPAs than nonathletes, for 2 out of 3 years. Because athletes had statistically higher GPAs and lower discipline referrals than nonathletes, it appears that participation in high school athletics does indeed make a positive difference on a student's discipline referrals and grade point averages.

Possible explanations for why athletes had fewer discipline issues and higher GPAs than nonathletes are: 1) athletes had greater motivation to succeed in school (to maintain athletic eligibility); 2) athletes felt more a part of the school community or team identity; 3) athletes had a positive outlet for releasing energy and stress; and 4) athletes' coaches served as an added mentor and support system (Adlaf et al., 2007). However, further research can help identify specific factors that might be responsible for these athletics participation factors. Future research should replicate this study in high schools with diverse populations to help validate results from this study.

Limitations

A limitation of this study is that the sample was only from one high school, so it cannot be assumed that the findings will hold true for other high schools; although the sufficient sample size in regard to discipline referrals suggests other educators could infer that the findings also apply to their schools. Greater understanding about this issue can be acquired from a larger and lengthier study, particularly one that includes larger samples for GPA, but this research can serve as an early indicator and launching point for further investigation. In addition, because the results were from only one geographic area, the study's conclusions cannot be generalized to other geographic/cultural regions but simply give insight into what may occur. Although multiple ethnicities were represented in the sample, it was composed predominantly of Caucasian students. Thus, conclusions drawn about minorities may be limited in scope and would require further research from more diverse schools. Finally, because this study was based entirely on numerical data, it did not address the non-quantifiable variables that may have led to the outcomes. For example, if athletes were found to have higher GPAs and lower discipline referrals than nonathletes, this research did not explain what it is, precisely, about athletics that contributed to such improved success.

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