Successful Athletic Programs And Academic Achievement At High School: Substitutes Or Complements?

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Abstract
Researchers have found that athletic participation and academic success in the classroom are correlated. Some speculate that the linkage is due to the fact that athletes enjoy a stronger identification with school. If participation in athletics results in a commitment to schooling and the values associated with educational attainment, then it seems reasonable to assert that a winning program may build even greater pride in and allegiance to ones school (greater commitment). It also seems reasonable to assert that this will benefit not only the participant but

perhaps the entire student body. This paper investigates the notion that winning sports programs—in particular, high school football—promotes success in the classroom. Empirical evidence does not support this idea except in the case of large schools.

ATHLETICS AND ACADEMICS AT HIGH SCHOOL: SUBSTITUTES OR COMPLEMENTS?

"It was felt that a major portion of the boards' time was spent on sports . . . versus the academic success of students. Statements were made that the 'board praised winning sports teams and ignored winning academics.' Stakeholders stated that teaching positions were changed and employees terminated to make room for coaches to the detriment of other programs."
–Report of the Quality Assurance Review Team for Tuscumbia City Board of Education, Southern Association of Colleges and Schools–Deshler High School, Tuscumbia, Alabama October, 2009

Introduction

Americans have become increasingly alarmed by the quality of education delivered by our public schools. Whether measuring United States student performance against the performance of students in other industrialized nations or against the performance of United States students from the past, the results are troubling. Both policy makers and educators are searching for solutions. Some policies that have been suggested for improving academic achievement include increased funding, lowering the pupil-teacher ratio, better teacher training, merit pay and encouraging competition among schools.

This paper takes a much more narrow approach to education quality and focuses on the relationship between academic performance and the success of high school athletics in the state of Alabama. In particular, the winning record of each school's football team is investigated. A sample of 285 high schools are utilized to test for a possible link between performance on standardized examinations and the past won-lost record of the high school football team over a ten year period. Thus, we seek to shed some light on the question: Does the success of athletic programs translate into success in the classroom or do successful sports programs compete with

the classroom, serving to distract students (and perhaps board members–see above) and absorb scarce resources? In short, are successful athletic programs and success in the classroom substitutes or complements?

In his book, *The Adolescent Society* (1961), sociologist James Coleman reasoned that athletic participation represented a zero-sum situation; that is, time and energy devoted to sports was time and energy not devoted to academics. Hence, athletic participation would exhibit a deleterious influence on schooling. However, a rather large literature has emerged that suggests otherwise.

Literature Review

Hanks and Eckland (1976) found a positive, but admittedly weak, relationship between participation in athletics and academic performance. Otto and Alwin (1977) examined academic performance and involvement in sports and found a positive relationship. Landers and Landers (1978) determined that rates of delinquency were lowest for those students engaged in service and leadership type activities as well as participation in athletics. Using data from the National Longitudinal Survey, Braddock (1981) found a positive and significant associated between achievement in the classroom and involvement in sports. Researchers Holland and Andre (1987) found that athletic participation was correlated with a number of positive attributes including higher educational aspirations, improved race relations and lower delinquency rates. The authors were careful to note that while correlated, no causal relationship was established. Picou, McCarter and Howell (1985) investigated academic performance and athletic participation and found that only white males benefited—others groups did not show salutary effects. Eccles and Barber (1999: 21) found that participants in team sports "liked school better" and had a higher than expected GPA in their senior year. The only negative associated with participation was an "increase in alcohol use." Barber, Eccles and Stone (2001) determined that high school athletes enjoyed both positive educational outcomes and positive occupational outcomes. Eitle and Eitle (2002) broke down participation into the sport played and determined that some sports exerted a greater influence than others on academic achievement.

Economist Stephen Lipscomb (2007: 470) quantified the relationship and found "that athletic participation is associated with a 2 percent increase in math and science test scores."

Ewing (2007) showed that former high school athletes fare better in terms of future earnings enjoying both higher wages and larger fringe benefits than those students that did not participate in sports.

While a positive correlation between athletic participation and academic performance is strongly supported by the literature, it is not clear why. Sabo, Melnick and Vanfossen (1989) assert that students with better grades self-select into high school sports. It's not that athletic participation produces better students but instead, better students are involved in athletics.

Professor Douglas Hartman (2008: 4) sums up what we know so far: "The relationship between athletic involvement and academic success is not, for the most part, a direct, causal one. It can, in fact, vary dramatically depending upon type of sport, level of participation, the background of the student-athletes involved, school characteristics, and relationship between the athletic program and the academic curriculum."

Possible Linkages

Even with the plethora of studies suggesting a positive influence, "the possibility that sport may have no causal impact on educational attainment whatsoever, or that athletics may even have negative impacts" cannot "be dismissed out-of-hand" (Hartman 2008: 12). Participation in sports could limit study time and energy or "an over-emphasis on sports might distract attention and concern from the core academic curriculum and educational mission of schools" (Hartman 2008: 12). It is also possible that athletes—typically unrealistically—believe that lucrative sports contracts make time devoted to educational pursuits unnecessary.

Theoretical explanations for a positive linkage include claims that sports are "inherently pro-social" and are an "activity that helps to instill virtue, character, and discipline in young people" (Hartman 2008: 12). As an additional possible reason for causation, and perhaps most obviously, students with little interest in learning must achieve a certain grade point average in many cases to play sports so that participation, no matter how convoluted, may be the impetus for greater study. "Student-athletes who have disciplinary problems or who perform poorly in the classroom risk being dropped from the team" (Miller et al. 2005: 2). Indeed, Laughlin (1978) found that athletes' performance in the classroom was cyclical improving during the season and dropping off out of season.

On the other hand, researchers March (1992), Barber, Eccles and Stone (2001) and Guest and Schneider (2003) all advance the notion that participation directly contributes to greater performance in school. In particular, they state that athletes enjoy a stronger identification with school. Extracurricular activities lead to a greater commitment to school and to the values associated with enhanced learning. In a study released by the University of Washington titled, "The Impact of Substance Use and Violence/Delinquency on Academic Achievement for Groups of Middle and High School Students in Washington," researchers point out that a commitment to school is an important factor related to academic success. The authors assert, "Factors such as poverty, community risk, absence of social skills, and lack of commitment to school also contributed to lower academic performance among groups of students" (Washington Kids Count 2002).

Hartman (2008: 25) points out the "need for continued research and writing on this topic." He asserts, "a comprehensive examination and assessment of the limitations and variability of the sport/education relationship is crucial if we are to understand how to best utilize and exploit sports programming and participation for educational benefit" (Hartman 2008: 4).

Institutional Impact of Winning Programs

In this paper, the focus is not merely on participation in athletics but on winning. In addition, we do not investigate whether the individual athlete benefits but the school as a whole. If, as some have suggested, athletics results in a commitment to schooling and the values associated with educational attainment, then it seems reasonable to assert that a winning program may build even greater pride in and allegiance to ones school (greater commitment). It also seems reasonable to assert that this will benefit not only the participant but perhaps the entire student body.

In a more indirect manner, successful athletic programs could, in addition, enhance community pride in the local school leading to more parental support and even extra local funding. Our focus is limited to football because it is the marquee program of schools in Alabama.

Of course, others have suggested that athletics detract from classroom performance. Successful high school football—being involved with a winning program—may absorb enough time and energy to actually harm education and could also serve as a distraction, elevating

athletic success above academic success. Running a competitive program may also represent a drain on financial resources. [i]

Evidence exists, at least at the college level, that students enjoy being associated with a winning athletic program. For example, McEvoy (2005) finds a positive relationship between improvements in a football team's winning percentage and subsequent undergraduate admission applications.

Empirical Model

The State of Alabama Department of Education produces an annual report card detailing standardized test scores along with other useful data for all Alabama public schools. The average ACT score for each high school in the year 2000 serves as the dependent variable in the analysis. Independent variables that have been identified in the literature as having an influence on test scores are entered into the model (see Hanushek 1996, for example). The following explanatory variables are found in the Alabama Report Card (http://www.alsde.edu/html/reports): total expenditures per pupil in year 2000, the percentage of students qualifying for free or reduced price lunches in each school in year 2000, the percentage of teachers in each school in year 2000 with a masters degree or higher(for evidence that teacher quality is associated with improved student performance, see for example Charles T. Clotfelter, Helen F. Ladd and Jacob L. Vigdor, "Teacher credentials and student achievement: Longitudinal analysis with student fixed effects" *Economics of Education Review,* Volume 26, Issue 6, December 2007: 673-682.), the percentage of total funds from local sources in year 1999 and the percentage of total funds from the state in 1999 (Couch and Kimenyi (1992) find that the source of funds contributed to improved standardized test scores with increased local funding levels linked to better performance). Thus, we control for per capita funding levels, the extent of poverty, teacher quality and the degree of local support for education.

The variable of chief interest is the percentage of victories of the high school football team from 1990 to 1999, a ten year period. This variable was calculated from documents obtained from the Alabama High School Athletic Association (AHSAA). The AHSAA also furnished the state athletic classification of each school in the sample. The classification is a measure of school size and is based on the number of students in grades 10 through 12. A school

is classified as 1A with up to 147 students, 2A between 148 and 209 students, 3A with between 210 and 291 students, 4A with between 292 and 422 students, 5A with between 423 and 777 students and finally, 6A with over 778 students. School size has been shown in the literature to impact student performance and also serves as an independent variable (for example see Kelly Bedard, William O. Brown, Jr. & Eric Helland, "School Size and the Distribution of Test Scores,"Claremont Colleges Working Papers 1999-11, Claremont Colleges).

Results

Table 1 contains the results of the analysis. Five separate equations were estimated using ordinary least squares regression. The first model does not control for school size while model 2 includes a dummy variable (SMALL) equal to one if the school is in classification 1A or 2A and zero otherwise. Model 3 includes a dummy variable (LARGE) equal to one if the school is in classification 5A or 6A and zero otherwise. Model 4—comprised of only 145 observations—includes only those schools in classification 1A through 3A. Finally, model 5 consists of the larger schools—classifications 4A and 6A—and totals 140 observations.

Expenditures per pupil are negatively and significantly related to standardized test scores in all of the models. While a somewhat surprising finding, Hanushek's review of the literature points out numerous studies that report a negative and significant relationship between dollars and test scores (1996: 54). Thus, like a number of other studies of the education production function, calls for greater expenditures for education are simple not supported by our empirical results. The proxy for poverty in the analysis, the percentage of students paying a reduced price for school lunches, is negative and significant in all of the specifications indicating that students from more modest backgrounds perform more poorly on standardized exams than those students that enjoy higher family incomes—a standard result in the literature.

With the exception of only model 4, the explanatory variable LOCAL is positive and significant. Thus, as local support for education increases, test scores increase as well. However, the percentage of funds from state sources was not significantly related to test scores in any of the models. While student performance is not linked to increased funding levels, the source of the funds is important to educational attainment. Local support for education translates into

enhanced learning. The results also suggest teacher quality as measured by greater percentages of instructors with a master's degree or higher is important to achievement. Our proxy for teacher quality exerted a positive and significant influence on test scores in three of the five models.

The results also indicate, after controlling for other factors thought to influence standardized test scores, students from smaller schools (1 to 209 students in grades 10 through 12) outperform students from larger schools. This finding is consistent with other studies that likewise find that smaller schools produce students that score higher on standardized exams than students from larger schools. The dropout rate has also been found to be lower in smaller schools as well.

The winning percentage of the high school football team over the last ten years is not significantly related to academic success in the models that include all the schools in the sample regardless of size. In addition, winning in football does not impact test scores in small schools either. However, winning percentage and test scores are significantly and positively related at the 10 percent level of confidence in model 5—the model that includes only larger schools. Thus, we find no evidence that successful athletic programs detract from a school's academic mission and only limited evidence that it serves in a complementary role.

Conclusion

Every year, millions of dollars are spent on high school athletics. Poorly performing coaches are dismissed, elaborate weight rooms are constructed and assistant coaches that know how to win are sought out—all in an effort to produce a winner. This paper looks for a link between athletic success and academic achievement. Football prowess, it was pointed out, could work to enhance student learning or, alternatively, it could work to diminish student achievement. Controlling for other factors commonly thought to influence standardized test scores, we find no evidence that successful football detracts from student achievement and some evidence, albeit very limited, that winning in sports is related to improved production in the classroom in large schools. Why the large school effect? Perhaps the commitment to school is more problematic in larger schools and so winning is more efficacious in these settings. Alternatively, participation in

extracurricular activities like sports and cheerleading are more contingent on academic performance in larger schools simply because of the sheer number of students. When another student is eagerly waiting in the background to participate, it is much easier to enforce discipline. Perhaps administrators in smaller schools—with fewer students to fill the slots required to field a cheerleading squad and a football team—may not have the luxury of vigorously enforcing the rules connecting participation to achievement.

Table 1

ACT Scores

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	22.0	21.75	21.6	32.7	22.3
	(18.3)***	(18.2)***	(17.9)***	(5.25)***	(12.87)***
$/Pupil	-0.0005	-0.0004	-0.0004	-0.0007	-0.0006
	(2.19)**	(1.93)*	(1.81)*	(1.79)*	(1.92)*
Poverty	-0.05	-0.05	-0.05	-0.06	-0.05
	(11.9)***	(12.1)***	(12.1)***	(9.5)***	(7.32)***
State	0.004	0.003	0.008	-0.09	-0.003
	(0.57)	(0.53)	(1.13)	(1.55)	(0.28)
Local	0.06	0.06	0.06	-0.02	0.07
	(5.45)***	(5.67)***	(5.87)***	(0.57)	(4.76)***
Teacher	0.01	0.008	0.006	0.004	0.008
	(2.72)***	(2.04)**	(1.6)	(0.04)	(1.8)*

Win	0.45	0.42	0.44	-0.39	1.3
	(0.94)	(0.88)	(0.93)	(0.62)	(1.77)*
Large		-0.44			
			(2.21)**		
Small		0.45			
		(2.43)**			
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Observations	285	285	285	145	140
R squared	0.52	0.53	0.53	0.51	0.54

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