

1983

An investigation of the academic performance of student-athletes playing football at Iowa State University

Debra L. Stuart
Iowa State University

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AN INVESTIGATION OF THE ACADEMIC PERFORMANCE OF STUDENT-
ATHLETES PLAYING FOOTBALL AT IOWA STATE UNIVERSITY

Iowa State University

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An investigation of the academic performance of
student-athletes playing football at
Iowa State University

by

Debra L. Stuart

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of the
Requirements for the Degree of
DOCTOR OF PHILOSOPHY

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For the Graduate College

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Iowa State University
Ames, Iowa

1983

TABLE OF CONTENTS

	PAGE
INTRODUCTION	1
Purpose	5
Objectives	9
Hypotheses	10
Definitions	12
Delimitations	12
REVIEW OF THE LITERATURE	14
High School Athletics for Males	14
College Athletics for Males	17
Black Student-Athletes	25
Summary	28
METHODOLOGY	30
Subjects	30
Data Collection	33
Hypothesis 1	35
High school rank	35
High school grade-point average	35
Semesters of high school mathematics	35
ACT score	36
MSAT score	36
Mathematics placement examination scores	36
Hypothesis 2	37
College grade-point average	37
Course load	38
English grade	38
Courses dropped and repeated	38
Hypotheses 4 and 5	39
Degree programs	39
Hypothesis 6	39
Persistence	39
Background variables	40
High School Graduation Class Size	40
Hometown Population	40

Analysis	41
FINDINGS	44
Academic Preparation	45
Academic Performance	49
Academic Performance with Preparation	51
Curriculum	51
Persistence	53
Background Variables	55
Summary	55
DISCUSSION	57
Summary	57
Conclusions	60
Recommendations	66
REFERENCE NOTES	71
REFERENCES	72
DEDICATION	77
ACKNOWLEDGMENTS	78

LIST OF TABLES

	PAGE
TABLE 1. Sample Sizes from which Non-Athlete Matches were Selected	32
TABLE 2. Degree Programs of Student-Athletes and Non-Athletes Upon Entering Iowa State University .	34
TABLE 3. Measures of Academic Preparation of Student-Athletes, Non-Athletes and the General Student Population Admitted 1977-1980	47
TABLE 4. Means and Standard Deviations of Mathematics Placement Examination Scores	48
TABLE 5. Measures of Academic Performance After Two Years of Student-Athletes and Non-Athletes . .	50
TABLE 6. Number of Student-Athletes and Non-Athletes Completing Required English Courses	50
TABLE 7. Number of Student-Athletes and Non-Athletes Who Changed Majors During First Two Years of College	52
TABLE 8. Number of Student-Athletes Enrolled in Each College Upon Entering and After Two Years . .	53
TABLE 9. Number of Non-Athletes Enrolled in Each College Upon Entering and After Two Years	53
TABLE 10. Enrollment Status of Student-Athletes and Non-Athletes by Number of Enrolled	54
TABLE 11. Academic Status of Student-Athletes and Non-Athletes After First Two Years	55
TABLE 12. Variables of Academic Preparation by College for 1977-1980	63

INTRODUCTION

The academic performance of student-athletes is a current and highly publicized topic in higher education. The relationship between the educational mission of colleges and universities and intercollegiate athletics has been questioned by students, parents, faculty, student personnel workers, and academic and athletic department administrators. The concerns are whether student-athletes have been prepared for college level work and whether they are given an adequate opportunity to attain a college degree. The following sample of titles of newspaper articles report the opinions of administrators, educators and athletes.

"A new slavery for black athletes" (Chicago Tribune, September 29, 1978),

"A victim at an early age: Athletes aren't prepared to go to college" (Chicago Defender, October 2, 1978),

"Black athletes: Specimens, not students" (Chicago Defender, October 3, 1978),

"Buffs' Recruit Loss Rate Disturbing" (Boulder Daily Camera, August 25, 1981),

"Proper place for college sports" (Des Moines Register, October 7, 1981),

"Improve athlete education: Page" (Des Moines Register, September 24, 1982),

"Roskens: Toughen Rules For Athletes in Classroom" (Omaha World-Herald, October 7, 1982),

"Case for requiring college athletes to be

students, not 'gladiators'" (Des Moines Register, November 7, 1982),

"Illiterate Athletes Not a Rarity" (Des Moines Register, April 11, 1983).

Publications associated with higher education have addressed the issue too. A commentary in The Chronicle of Higher Education was entitled "'If You Flunk Billy, It'll Cost Us the Game'" (Schott, 1981). The Chronicle also published a story about a professor who was charged with having "inflated the grades of student athletes and helped them cheat on tests" (August 11, 1982). The AAUP's Academe judged the topic to be sufficiently important to publish the article, "Intercollegiate Athletics: Big Business or Sport?" (Odenkirk, 1981).

In January 1983, the National Collegiate Athletic Association (NCAA) responded to these concerns for the educating of student-athletes by restructuring the eligibility requirements of high school qualifiers. The previous rule stated that a student-athlete could compete if he or she

is a high school graduate and at the time of graduation from high school presented an accumulative six, seven or eight semesters' minimum grade-point average of 2.000 (based on a maximum of 4.000) (NCAA Manual, 1982-1983, p. 74).

The recent change, known as Rule #48, requires that the 2.000 grade-point average be

in a core curriculum of at least 11 academic courses including at least three in English, two in mathematics, two in social science and two in natural or physical science (including at least one laboratory class, if offered by the high school) (NCAA, 1983, p. 32).

In addition, athletic department administrators attending the 1983 NCAA Convention voted to require that student-athletes have "a 700 combined score on the SAT verbal and math sections or a 15 composite score on the ACT" (NCAA, 1983, p. 33) before they are eligible for intercollegiate competition. The intent of the NCAA is to insure that student-athletes receive a high school education which prepares them for college level work. No one has disagreed with the intent, but these new rules have been attacked by educators, many of them black, as not being the appropriate criteria for predicting academic success in college.

When setting any academic preparation criteria for student-athletes, their role as an athlete must be acknowledged. The questions are raised: "Are the athlete's role and responsibilities as a legitimate student being unwittingly compromised? Indeed, is it possible to be both an achieving student and an athlete?" (Ness, 1981, p. 23). According to Dr. Gerald Gurney (Note 1), their Academic Counselor, the student-athletes playing football at Iowa State University commit approximately forty hours each week, on the average, during the academic year to athletics. During the football season, they meet with coaches and

practice on the field six hours per day, Sunday through Friday. Games played on Saturdays require seven or more hours depending upon the amount of travel time. The winter is used for physical conditioning and requires fewer hours. Practices, including scrimmages on Saturday, begin again in the spring and require more time. Throughout the academic year, meals (training table) and studying (study table) are supervised by athletic department personnel.

The subjective nature of much that has been written about intercollegiate athletics is reflected in the strong, sometimes emotional, stands taken for and against their prominence within education. Student-athletes are concerned about their future, yet they can be caught up in the excitement of television or press coverage and the opportunity for the glamour and salaries of professional athletes. The alumni expect winning seasons that bring fame to their alma mater. The university administration may depend partially upon the income and attention which strong sports programs generate. Concurrently, they do not want conflicts with the educational mission of their institution (e.g., differing admissions standards, paying students to attend, falsifying transcripts). "At the University of Oklahoma, for instance, President Paul Sharp admitted that the state legislature seems friendlier to the school when the football team is winning games" (Benagh, 1976, p. 4).

Coaches are hired and fired on their win and loss records, but evaluated by the public on the graduation rates of their student-athletes (Hammel, 1980).

Further, in dealing well with players the coach must exercise the talents of a good clinical psychologist. He treats with intense, competitive, tough-minded youngsters who know they are gifted, who have been warmly entreated, even enticed, to join him. They have many sorts of problems, often real, and the coach has not only to keep them in balance (and in school) through the griefs and troubles of youth, of boys from deprived backgrounds, of students exposed for the first time to actual intellectual training-- all the problems well-staffed offices of 'Student Personnel' treat in the student body at large (Cady, 1978, p. 121).

Purpose

The purpose of this study is to accurately describe student-athletes and their collegiate academic deficiencies which may have resulted from demanding a great deal of the student's time without providing additional support. Most athletic departments do not offer the support services provided to the general student body by student personnel workers (Gurney, Robinson, & Eygetakis, 1983). Assessing the needs of these students and how well they are being met has become important to those trained in Student Personnel Work. Organizationally, at some universities the student affairs division has been given responsibility for intercollegiate athletics because students are filing lawsuits and receiving publicity for being mistreated.

Admissions, financial aid, housing, discipline, counseling and advising offices are scrutinized because of the publicity and unique concerns peculiar to the student-athlete. Also, student affairs staff are the advocates for these students when stereotypes of student-athletes, a highly visible group, are applied unwittingly or consciously to specific individuals.

One measure of academic performance has been the graduation rates of student-athletes. Attention has been drawn to the non-graduates, the public believing that athletes were woefully prepared and that the university faculty and staff were negligent. The public expectation is that becoming educated is synonymous with receiving a degree from a particular institution.

Graduation rates are calculated by counting the number of students who entered a college or university compared to the number who received degrees within four to six years. Although this is an easily quantified measure of the institution's success, it may be misleading to evaluate success with subgroups of the student population. Some students, athletes and non-athletes, may have never intended to receive a degree from their original institution or within a set number of years. Is it the assumption that the degree is the only meaningful result of the student-athlete's exposure to college (Ness, 1981)?

Academic success is a measurement of whether a student-athlete is capable of college level academic work and whether the institution of higher education provided him or her with the opportunity to acquire a postsecondary education. Ness expressed a similar sentiment to a Sociology of Sport Academy Symposium:

An athlete will be a student if he or she wants to be, given the skills to do so. And conversely, a student will be an athlete if he/she wants to be, given the skills to do so (Ness, 1980, p. 4).

Unlike other professional sports, football requires players to participate at the college level before being eligible to become a professional. An academic degree is not required. Four or five years of athletic ability is developed so that a crop of mature players is available, similar to baseball's farm teams (Benagh, 1976; Underwood, 1980). Considering the current relationship between intercollegiate and professional football, if a student-athlete has an opportunity to attain his goal of being a professional athlete, is higher education at fault if he is not simultaneously able to attain the degree he did not really want at the time?

Therefore, the questions to be studied are (1) whether student-athletes playing football at Iowa State University were sufficiently prepared and performing well-enough to acquire a college education and (2) whether they performed as well as a comparable group of non-athletes. This can be

accomplished by measuring the academic preparation and performance of the first two years of student-athletes compared to a group of non-athletes with similar academic intentions at the same university. The assumption is that the foundation of one's academic success is built on early performance. Because a comparison to the entire university student population is possible with the use of statistics made available by the university, this matched sample will allow comparison with a non-athlete group most like the athletes in background and in the specific area of concern--academics. The findings of both comparisons will be reported and discussed.

A comparison controlling for race will make this description more meaningful because academic preparation and performance differences between black and white student-athletes have been found. It is believed that black student-athletes historically have been recruited for athletic ability and then not helped or even hindered from adjusting to college life and academics. Some athletes have been advised to take courses that may not lead to a degree, but will allow them to remain eligible or have been counseled to major in physical education only (Dillard, 1977; Green, 1974; Ruffer, 1971).

Objectives

The primary objective of this study is to add to the body of knowledge concerning the academic preparation and progress of intercollegiate student-athletes. A significant contribution can be made by studying subgroups of these students. Football is regarded as a prominent subgroup because it is a highly publicized and generally revenue-producing team sport. Much of the concern surrounding intercollegiate athletics centers on football possibly because people who aspire to careers in professional football must first play intercollegiate football regardless of whether they desire further education or a college degree.

Another objective of this study is to provide a comprehensive description of the academic performance of the football student-athlete. A study involving several institutions, for example those in the Big Eight Athletic Conference, would be desirable; however, it is believed that obtaining and comparing in-depth information from other institutions is unduly difficult due to its sensitive nature. The result of a study involving only Iowa State University may be institution specific; however, the methodology is applicable to other colleges and universities.

A related objective is to identify specific curricular needs of the varsity student-athlete due to insufficient preparation at the high school level or before. If student-athletes tend to have different needs for remedial work in core courses and vocational advising (involving choices of major and courses, and whether or not to remain in school), this information is useful in designing support services. Student affairs and athletic department administrators could use such a description of deficiencies and strengths for future assessment of recruits.

Another objective of this study is to assess the direct or indirect contribution of higher education to the academic performance of recruited student-athletes. "What miracles can we expect of athletic participation that will compensate for poor early academic preparation" (Ness, 1981, p. 23)? By controlling for prior preparation and comparing athletes with non-athletes of similar academic interests, some insight into their respective rates of academic progress can be gained. The focus of this study is on the first two years of enrollment, rather than graduation rates.

Hypotheses

The six hypotheses to be tested are reported in the null form.

1. There is no difference in academic preparation as

measured by high school rank, high school grade-point average, semesters of high school Mathematics, ACT score, MSAT score, and Mathematics Placement Examination scores between the groups of student-athletes playing football and male students who are non-athletes and are enrolled in similar academic programs.

2. There is no difference in academic performance as measured by college grade-point average, course load, English grade, and courses dropped and repeated, after two years, between the groups of student-athletes playing football and male students who are non-athletes and are enrolled in similar academic programs.

3. There is no difference in academic performance between the groups of student-athletes playing football and male students who are non-athletes and are enrolled in similar academic programs, when controlling for academic preparation.

4. There is no difference in the number of changes of major between the groups of student-athletes playing football and male students who are non-athletes and are enrolled in similar academic programs.

5. There is no difference, after two years, in the distribution among colleges between the groups of student-athletes playing football and male students who are non-athletes and initially are enrolled in similar academic

programs.

6. There is no difference in the persistence rate between the groups of student-athletes playing football and male students who are non-athletes and are enrolled in similar academic programs.

Definitions

1. A student-athlete playing football is a student who has been admitted to college with a full athletic scholarship to play football.
2. A full athletic scholarship covers the costs of room, board, tuition, and required books.
3. A black student is one who is classified by the Admissions Office of Iowa State University to be Afro-American as defined by the U.S. Department of Education.
4. Male students who are non-athletes are not international students and neither receive athletic scholarships nor participate in any varsity sport.

Delimitations

The results of this study may be generalizable only to other athletically competitive institutions with similar reputations for winning seasons and comparable television coverage, as well as academically similar universities within the Midwest. Iowa State University is a NCAA

Division I-A institution and a member of the Big Eight Athletic Conference.

The student-athletes chosen to participate in this study are representative of those in a recruitment pool. This pool has geographic limitations, but also is restricted by the athletic reputation of Iowa State University.

REVIEW OF THE LITERATURE

The relationship between education and athletics has been investigated frequently during the past four decades. Motivated by a common concern for the possible negative effects of participation, researchers have frequently compared student-athletes with non-athletes, team sports with individual sports, and white players with black players. For the purpose of this study, the author summarized the relevant literature under three topics: high school sports, intercollegiate athletics and black student-athletes. This division emphasizes the differences between high school and college participation and between white and black student-athletes.

High School Athletics for Males

For high school students, researchers have been concerned about the academic skills and goals of male student-athletes. They have investigated grades, socioeconomic status, influence of others, residence and measures of achievement and intelligence. Comparisons have been made with non-athletes, those involved in other extracurricular activities, and the "star" players with other student-athletes.

Davis and Berger (1967) found that a regression equation predicting the grade point average of high school

non-athletes from high school grades and SAT scores also predicted the grade-point average of athletes. They concluded that the groups were essentially equivalent and that the athletes performed slightly better in history.

In a replication and extension of a study by Rehberg and Schafer in 1968, Spreitzer and Pugh (1973) found added evidence that athletic participation in high school does not hinder educational goals even when controlling for socioeconomic status, academic encouragement and grade point average. In addition, they found that this relationship is mediated by improved peer status given to athletes in schools where sports are revered.

Further support for the positive relationship between high school athletics and educational aspiration was produced in a study by Otto and Alwin (1977). Educational attainment, occupational attainment and income also are positively correlated with participation in athletics. A mediating variable appears to be the influence of parents and best friends, not peer status as the study by Spreitzer and Pugh (1973) indicated.

Predisposition toward college attendance (as measured by socioeconomic status, parental encouragement and grade-point average) and rural or urban residence were introduced as variables by Picou and Curry (1974).

These findings concur with those of earlier inquiries, and suggest that the significance of

participation in high school athletics for aspiration formation is greatest for youth who are not disposed toward attending college (p. 776).

Hauser and Lueptow (1978) designed a longitudinal analysis of males from five high schools examining their grades, intelligence scores and athletic status. "These findings show that athletes are better students to begin with, but lose a portion of their advantage during the years of their athletic involvement" (p. 305). In addition, students with 'high' athletic status did not perform as well as those with 'some' status. They found "no support for the proposition that athletic participation is especially beneficial for disadvantaged students" (p. 307).

In 1978, a study

tested Spady's (1970) contention that high school athletes were deficit in the academic skills necessary for later success in college because athletics were their only form of extracurricular involvement (Landers, Feltz, Obermeier, & Brouse, 1978, p. 475).

Participation in service and leadership activities were the other extracurricular forms used to categorize athlete-only and athlete-service groups within the 1975 Maryland (N=239) and the 1977 Pennsylvania (N=403) samples of male and female high school students. When these groups were compared to national averages, male athletes-only had significantly lower SAT scores in both samples and male athletes-service performed significantly better in the Maryland sample. Because more athletes-only (17-36%) did not take the SAT or

ACT, the authors concluded that student-athletes "may not be thoroughly committed to attending college" (p. 481). Also, "star athletes increased their grade point averages significantly less than athletes or nonathletes who were not stars" (p. 482).

Participation in high school athletics, based on the research described here, appears to offer several benefits and a drawback. Student-athletes tend to aspire to high educational and occupational goals, in some cases including those who may not have had such goals except for their exposure to athletics. The academic skills of student-athletes may not differ appreciably from non-athletes; however, a closer examination indicated that athletes began with stronger skills and improved at a slower rate than non-athletes, especially those who received the most public attention. Many of these relationships have been correlated also with the extra attention given by peers, friends and parents.

College Athletics for Males

Intercollegiate athletics have been examined for their influence on educational performance and occupational success. Many comparisons with non-athletes have been conducted, as well as examining subgroups by sport, race and amount of publicity. In addition to those variables studied

in the high schools, course loads, attrition rates, and majors of college student-athletes have been studied.

Smith and Dizney (1966) matched 60 football players to non-athletes by entry date, ACT composite score and major. The Brown-Holtzman Survey of Study Habits (SSHA) was administered to 22 of these pairs. They found no difference between the groups in mean cumulative grade-point and credits hours, SSHA raw scores or in-season grade-point average. Structured interviews with the student-athletes revealed that most (77%) did not believe playing football hurt them academically; however, most (73%) did take the time commitment into account when scheduling courses during the season of competition.

When adding high school rank as a variable, 130 male athletes and non-athletes were matched. Frantz (1967) examined size of high school graduation class, age, intended major, parents' occupations and grade-point average. He found that the student-athletes tended to be younger and come from larger high schools. The two groups had similar grades (after one semester and one year), majors, socioeconomic backgrounds and attrition rates. However, the football players were more often Business Administration majors, had lower ACT scores and grades, came from smaller high schools and had higher attrition rates than other athletes.

In conclusion, the study indicates that while in general student athletes do not constitute a unique population, football players do appear to make up a segment of the student body that may warrant the special attention of student personnel workers and counselors (p. 99).

VanDerHeyden (1969) was more interested in determining the effect of athletic participation on grade-point averages among male varsity student-athletes at Iowa State University. He divided 217 athletes from 1962-1967 by sport and the quarter in which they participated. Although the researcher believed he should have controlled for course load and major, only golfers differed significantly between Fall and Winter quarters. Football and basketball players differed one year between Winter and Spring and another year between Fall and Winter.

Matching 111 Ohio State University entering freshmen by gender, entry date, college, ACT score, high school rank and parents' occupation, still another project of comparing male college athletes to non-athletes and predicting the academic success of student-athletes was conducted by Parsons (1969). He employed the standard equation used by OSU for predicting cumulative grade-point after three quarters. Many of the athletes were football players (40%), most were from middle (65.2%) or high (23.5%) socioeconomic status and in the top 40% of their graduation class (71.3%), and half (50.4%) scored 22 or above on the ACT. The student-athletes tended to major within the colleges of Arts and Sciences (37.4%)

and Education (30.4%) and more graduated (all, 59.1%; basketball, 69.2%; football, 64.4%; other, 52.6%) than the non-athletes (43.2%), although they usually required more time. The actual grade-point was higher than the predicted for both groups, but the attrition rate was lower for athletes.

Academic major, as a key to understanding the academic performance of student-athletes, was studied next. In 1971, Wang studied male athletes and Physical Education majors. He used the declaration of major made prior to the beginning of the junior year, thus excluding students who left school during the freshman and sophomore years. The sample consisted of 29 athlete Physical Education majors, 172 athlete non-Physical Education majors, and 70 non-athlete Physical Education majors. A comparison was made of freshman and sophomore grades and ACT scores in English, Mathematics, Social Sciences and Physical Sciences. The researcher reported no difference between athlete and non-athlete Physical Education majors. Non-Physical Education athletes performed better than Physical Education majors, both athletes and non-athletes.

Hanks and Eckland (1976) assessed "the role of the extracurricular program in the educational attainment process which distinguished between participation in athletics and other activities" (p. 271). Their model

controlled for family background, academic ability and educational expectations. They found that in both high school and college the effects of social participation on educational performance and achievement were mediated by contacts with others and whether or not they were enrolled in a college preparatory curriculum. Among other results, they found that (1) academically superior high school athletes and non-athletes tend "to reduce their participation in extracurricular activities in college" (p. 290) and (2)

Varsity sports are not detrimental for those who participate, at least not in terms of average grade performance or attrition. Actually, athletics have a slight positive effect on keeping students in college and even on going to graduate school (p. 290).

In a study parallel to this one, Snyder (1978) compared the academic performance of college athletes and non-athletes, as well as established a model for continued evaluation. He examined ACT scores and high school ranks as measures of academic preparation and course loads, grade-points after one semester and at the end, and attrition and graduation rates as academic performance variables. The hypotheses he tested were based on his personal experience with athletes and the conclusions drawn from the literature:

Although it has often been pointed out that the results of the studies reported are either inconclusive or conflicting, it does seem safe to conclude from the evidence presented that the academic performance of athletes at most

institutions has been at least equivalent to that of nonathletes (p. 38).

Expecting that the University of Illinois at Urbana-Champaign would be among these, he hypothesized that athletes would out perform non-athletes and have a high retention rate. Snyder found that when taking into account entering abilities, athletes did indeed perform better than all male non-athletes except those involved in activities. Also while controlling for academic preparation, football and basketball players entered with lower scores than other athletes, but both achieved similar grades and no significant differences were found among athletes enrolled in different colleges. Snyder explains these results as being attributed to (1) the athlete's increased incentive to remain in school and (2) the extra numbers of adults supporting the student-athlete.

The relationship of occupational success, as measured by prestige and income, to participation in intercollegiate athletics provided another viewpoint of the performance of student-athletes (Dubois, 1978). The researcher controlled for education, age, race, grade point average, length of work experience and father's occupational prestige. Studying male athletes from three universities, Dubois found no support for the proposition that athletes attain greater success. Dubois (1979) later expanded his design to investigate categories of athletes: "star, major sport,

major sport star, team sport and spatially central playing position" (p. 103). The results supported the findings of the first study. In addition, he found that participation in individual sports as opposed to team sports had a significant adverse effect on earnings.

A related concern, then, is if athletes do not achieve greater rewards after college, do they at least improve their status? A study of the social origins and mobility of Notre Dame intercollegiate football players graduating between 1946 and 1965 addressed this question (Sack & Thiel, 1979).

It was found that Notre Dame football players came from much lower socioeconomic backgrounds than regular Notre Dame students. In terms of social mobility, both ballplayers and regular students from lower socioeconomic backgrounds have moved well beyond their social origins (p. 60).

However, ballplayers were more likely to attend graduate school and

first teamers experienced greater income mobility than second teamers and reserves. First team ballplayers were also found to be over-represented as top ranking executives in their companies (p. 60).

More recent studies, again, have investigated the academic performance of student-athletes. Purdy, Hugnagel and Eitzen (1981) reported a study of the academic progress of 2088 NCAA Division I-A athletes covering ten years.

The athletes' educational progress, measured by their grade-point average and graduation rate, were compared to the general student population.

Athletes were found to be only slightly different than the general student population with regard to grade-point average, graduation rate, entrance scores and high school grade-point average. Results indicate that significant differences existed between certain groups within the athlete population. Educational achievement was more likely to be found for females than for males, and in whites rather than among blacks. Individual and nonrevenue producing sport participants achieve higher educational attainment than did athletes from the major revenue producing sports. The data refute the notion that athletic participation is detrimental to the educational attainment process. However, particular subgroups of athletes may be placed at a disadvantaged with respect to achieving the goal of a college degree, either through their previous socialization or the time demands made by particular sports (pp. 3-4).

Brigham (1981) set out to determine if the academic success of intercollegiate male student-athletes could be predicted by high school rank, grade-point and graduation class size, ACT score, race and family income. Almost half (47%) of the 124 scholarship student-athletes at Southern Illinois University at Carbondale were football players. High school rank, which was highly correlated with high school grade-point average and weakly correlated with ACT score, high school grade-point average and race were strong predictors of college grade-point average of white male student-athletes. ACT score, family income and race were predictors of the academic success of blacks. A significant interaction existed between race and persistence on both high school and college grade-point average and the ACT mathematics score. Of those who graduated more were

transfer students and more were white student-athletes.

Black Student-Athletes

Prior to 1968, the research reported in the literature was not revealing the discrepancies in academic performance administrators and researchers expected. Earl (1968) therefore compared athletes and non-athletes within ethnic groups (Anglo, Indian, Negro and Spanish American). Academic achievement of the 333 students, of which 173 were athletes, was measured by a combination of ACT score or Cooperative School and College Test (SCAT) score and grade-point averages converted to T-scores. Overall, he found no difference between athletes and non-athletes, Anglo and Spanish American, or Negro and Indian students (both athletes and non-athletes). Anglo and Spanish American non-athletes achieved higher scores than their athlete counterparts and these Anglo and Spanish American athletes performed better than Negro and Indian athletes. Negro and Indian athletes, though, out performed Negro and Indian non-athletes. Therefore, this research identified an interaction between race and athletic status concerning college academic performance.

An article entitled "Black Athletes: Educational, Economic, and Political Considerations" (Green, Smith, Gunnings, & McMillan, 1974) reported on a study conducted in

1960 through 1964, among others with similar findings, that black student-athletes have been graduating at about half of the rate of their white counterparts and required more time in which to do it. These authors also described a report to the Big Ten Conference which explained that black intercollegiate student-athletes encountered a lack of support and faith in their ability. They concluded that

The Black athlete usually enters the white university with a secondary education from an educationally inferior school system... He enters the white university with a poor academic self-image, and his experiences in college only reinforce this picture (Green et al., 1974, p. 15).

Spivey and Jones (1975) compared the graduation rates of black student-athletes to white student-athletes and athletes to non-athletes. The sports analyzed for this study were football, basketball, track and fencing. The black student-athletes tended to have a lower ACT score even though their high school rank tended to be higher than the white student-athletes. Only 35% of the black athletes graduated. Differing from the other groups, most of the black athletes (66%) majored in Physical Education. Higher attrition was found among blacks participating in football and basketball.

While comparing the influences of athletics on the educational aspirations of black and white male adolescents, Picou (1978) examined parents' education, the student's

academic performance, educational encouragement, educational aspiration and athletic participation. It appears that athletic achievement has a significant relationship to educational aspirations of black high school athletes only. The author concludes that "educational aspirations, for some high school athletes, may indicate a desire to continue athletic careers rather than complete a college degree" (p. 429).

More recent studies, again, have investigated the academic performance of student-athletes. Braddock (1981) examined "the relationship between athletic participation and several diverse indicators of educational attainment--including curriculum placement, grades, academic self-esteem, college plans and college attainments" (p. 337). He analyzed data from the National Longitudinal Survey of the High School Class of 1972. He concluded that participation in high school athletics does not adversely affect educational attainment of black or white male students.

Edwards' (1982) comment on the academic performance of black student-athletes, and the fact that black athletes compose 55% of the professional football players, is that it is the result of socialization into a racist society.

Since Jackie Robinson ostensibly shattered the color barrier in professional baseball, sports have accrued a reputation for having achieved extraordinary, if not exemplary, advances in the realm of interracial relations (p. 9).

However,

Blacks in sport also function in a semi-caste system, relegated as they are to the least powerful, least secure, most expendable, and most exploited role in the sports institutions--that of the athlete (p. 20).

Summary

The empirical research concerning high school athletic activities varies sufficiently that no precise conclusions can be drawn. Participation may inspire those not usually planning to attend college (Picou & Curry, 1974), but not necessarily those from low socioeconomic backgrounds (Hauser & Lueptow, 1978). Student-athletes may perform the same academically as non-athletes (Davis & Berger, 1967; Hanks & Eckland, 1976) and aspire to the same (Spreitzer & Pugh, 1973) or higher educational goals (Otto & Alwin, 1977). However, athletics, as an extracurricular activity, may hinder preparation for college (Hauser & Lueptow, 1978; Landers et al., 1978).

The college student-athlete may differ from the high school athlete and some athlete subgroups may differ from non-athletes. Academically superior high school students tend to participate less in college extracurricular

activities, including athletics (Hanks & Eckland, 1976). Within this group, then, academic performance and attrition do not appear to be hindered by participation. Of those who graduate, male student-athletes may (Sack & Thiel, 1979) or may not (Dubois, 1978, 1979) achieve greater success as measured by occupational prestige, income and further education. Male student-athletes, black student-athletes and participants in major sports appear to differ significantly from the average student-athlete (Purdy et al., 1981). The graduation rate of student-athletes is debatable (Purdy et al., 1981), probably due to differences in selecting the sample.

METHODOLOGY

The Iowa State University Committee on the Use of Human Subjects in Research reviewed this study and concluded that the rights and welfare of the students were adequately protected, that the risks were outweighed by the potential benefits and expected value of the knowledge sought, and that confidentiality of data was assured.

Subjects

The selection of subjects was based on matching, by entry date, race and academic intentions, non-athletes with student-athletes recruited to play football at Iowa State University in 1977 through 1980. The study was limited to four years to control for changes in academic policies and practices since institutional responsibility is being examined. This four year period also reflects two years each of recruitment by two head football coaches. There was also a desire to collect the most current information covering the first two years of a student-athlete's career; therefore, the entering class of 1980 was the most recent class available in order to conduct this research in 1982.

All freshman students awarded athletic scholarships to play football at Iowa State University in the Fall terms of 1977, 1978, 1979 and 1980 were identified and verified from three sources. In order to control for the contribution of

Iowa State University, junior college transfers were not included. Three lists were compared to be certain all recruited football players would be included. They were:

1. Big Eight Conference list given to the Registrar's Office and used to conduct the study leading to the NCAA Rule #48 about eligibility requirements,
2. "Coaches Grant-in-Aid List for Football" for 1977 through 1980 maintained by an athletic academic counselor, and
3. "Freshman Profiles" from Iowa State University Football Press Guide for 1977 through 1980.

Participation in football during the freshman year was verified by academic credit in an intercollegiate sport recorded on the student-athlete's transcript. The Big Eight study and press guides identified the race of each student-athlete: 61 white and 30 black.

Matching non-athletes began with lists obtained from the ISU Registrar's Office. The names of all black males who entered Iowa State University as freshmen in the Fall terms of 1977, 1978, 1979 and 1980 and did not receive athletic scholarships were taken from the Registrar's computer-stored file. A sample of white non-athletes was obtained by searching the same computer file (all Iowa State University students of the past ten years listed by social security number) and selecting a representative sample of

white male students who entered in the Fall terms of 1977 through 1980 and did not receive an athletic scholarship. International students were excluded from both lists. This method resulted in a representative sample of 1150 white male non-athletes. Table 1 shows the numbers of non-athletes by entry date from which matches were selected.

TABLE 1. Sample Sizes from which Non-Athlete Matches were Selected

Entry Date	Race	
	Black	White
1977	31	248
1978	19	268
1979	25	289
1980	32	345
	107	1150

Academic intentions, the third criterion used in matching, is represented by the degree program to which each student was admitted upon entering Iowa State University. This information was obtained from each student's admission file.

Matches for each athlete were chosen from the lists which had been separated by entry date and race. The matching by degree programs was not exact because the student-athletes tended to be over represented in some departments. An attempt was made to protect the intent of

the matching process, that is, academic intentions. Therefore, whenever an exact match was not possible, the most similar curriculum was selected, first within the same college and then in another college. Descriptions of the course work required for each degree were obtained from the Iowa State University Bulletin for the year in which the student-athlete enrolled. The distribution of degree programs of the student-athletes and non-athletes is shown in Table 2. There was no significant difference ($p \leq 0.05$) between the distribution of student-athletes and non-athletes among colleges after matching them as closely as possible by major ($\chi^2 = 6.53$).

Data Collection

The admissions file, unofficial Iowa State University transcript, and orientation tests scores of each student-athlete and non-athlete contained the data required to test the hypotheses. Explanations of each variable include where and in what form the information was obtained. The goal of this research was to gather as much information about academic performance as possible even though some of these variables are highly correlated. There was reason to believe from the beginning that some of the students, possibly concentrated among the student-athletes, did not report their ACT scores. Students within certain curricula

TABLE 2. Degree Programs of Student-Athletes and Non-Athletes Upon Entering Iowa State University

Degree Programs	Student-Athletes	Non-Athletes
Agriculture College	8	7
Agriculture-Undeclared	3	0
Agricultural Business	2	2
Animal Science	0	1
Farm Operation	0	1
Forestry	2	2
Horticulture	1	1
Engineering College	15	16
Engineering-Undeclared	13	13
Aerospace Engineering	0	1
Electrical Engineering	1	1
Engineering Science	1	0
Industrial Engineering	0	1
Home Economics College	1	0
Institution Management	1	0
Sciences & Humanities College	45	56
S & H-Undeclared	12	14
Biology	0	1
Botany	1	0
Communications	5	2
Computer Science	1	2
Distributed Studies	0	1
Economics	0	1
Industrial Administration	19	20
Journalism & Mass Communications	3	5
Political Science	2	1
Psychology	1	3
Sociology	1	2
Speech	0	1
Zoology	0	1
Pre-Veterinary Medicine	0	2
Education College	21	10
Elementary Education	2	3
Industrial Education	5	3
Leisure Services	3	0
Physical Education	11	4
Design College	1	2
Architecture	1	2

may not have been required to take the MSAT for placement in an English course. The variables are arranged and reported here in the order of the hypotheses to be tested.

Hypothesis 1

The first hypothesis tested differences in academic preparation between student-athletes and non-athletes. The academic preparation measures used were high school rank, high school grade-point average, semesters of high school mathematics, ACT score, MSAT score and mathematics placement examination scores.

High school rank The high school rank of every student is reported on his transcript. It is calculated by dividing the student's numeric standing in his graduation class by the class size, therefore 1% is the highest possible rank.

High school grade-point average The high school cumulative GPA was obtained from the high school transcripts in admissions files. Only those based on a four-point scale of A=4 were collected.

Semesters of high school mathematics The Admissions Office summarizes the number of semesters each student studied core courses. The number of semesters of mathematics used in this study does not distinguish among those in algebra, geometry, trigonometry and calculus so as not to differentiate among high school curricula. No

attempt to count semesters of English is made by the Admissions staff because of the difficulty differentiating between composition and literature courses; therefore, semesters of English were not collected.

ACT score The ACT composite score is reported on the transcript of Iowa State University students. For those who reported SAT scores, a conversion table used by the Admissions Office was applied and reported.

MSAT score The Minnesota Scholastic Aptitude Test 1964 edition (Form C) was administered during orientation to incoming Iowa State University freshmen during the period covered by this study. The results were used for placement in one of the two required English composition courses. The test consists of 75 items and covers reading comprehension, vocabulary and verbal analogies.

Mathematics placement examination scores Iowa State University developed these instruments which are administered during freshman orientation activities. During 1977 and 1978, two different math placement tests were used. (1) The precalculus test was designed to measure ability in college algebra and trigonometry and assumed a background of seven semesters of high school mathematics. Three scores are reported: algebra score, trigonometry score and total score. (2) The algebra-trigonometry test was designed to identify the need for remedial work. Two scores are

reported: algebra score and trigonometry score. Both of these tests were replaced in 1979 by an examination consisting of five 30-minute tests covering algebra, trigonometry and calculus. Each student took two adjacent tests in the series. The first depending on whether he had had (1) two or fewer semesters of algebra, (2) three or four semesters of algebra in which he received all As and Bs, (3) three or four semesters of algebra in which all the grades were not Bs or better, (4) four semesters of algebra and some trigonometry, or (5) one semester of calculus. The second test depended on the score of the first. With a passing score, he took the next most difficult test in the sequence. If he received a poor score, he dropped back to the preceding test.

Hypothesis 2

The second hypothesis tested for significant differences in academic performance. The variables used were college grade-point average, course load, average English grade and number of courses dropped and repeated.

College grade-point average The cumulative grade-point average each student earned after two years of college was obtained from his ISU transcript. The GPA includes grades from summer school, except those transferred from other institutions, up to enrolling in the student's third Fall term.

Course load Course load was measured by the number of semester credit hours the student had accumulated prior to beginning his third year in college. These credits include those earned in courses in which the student received a satisfactory pass instead of a grade and those transferred from other institutions. The calendar at Iowa State University changed from quarters to semesters beginning the Fall of 1981; therefore, for consistency in this study, all quarter credit hours were converted to semester credit hours by rounding upward from any partial credit hour. This process was used by the Registrar's Office during the transition from quarters to semesters.

English grade Transcripts were checked to determine whether the student had completed one, both or neither of the required college composition courses in his first two years. If both courses were completed, the mean grade was reported.

Courses dropped and repeated Students at Iowa State University may drop up to five courses during their academic career and repeat approximately five courses (fifteen credits). The number dropped and repeated during the first two years were counted.

Hypotheses 4 and 5

The fourth and fifth hypotheses tested for differences in changes in major.

Degree programs Data were collected on how many and which degree programs (majors) each student declared within the first two years of college. The college in which the department or program is located was also coded.

Hypothesis 6

The sixth hypothesis tested for differences in persistence rates between student-athletes and non-athletes.

Persistence Based on a review of each student's transcript, a code was assigned to indicate his attendance record at Iowa State University. The eight possible categories were as follows: (1) continued to be enrolled after two years, (2) withdrew before completing one academic year (three quarters or two semesters), (3) withdrew after completing one academic year, (4) withdrew after completing two academic years, (5) dismissed before completing one academic year, (6) dismissed after completing one academic year, (7) dismissed after completing two academic years, and (8) withdrew and was re-admitted during the two years and continued to be enrolled after those two years.

Background variables

An estimate of the student's background was developed by comparing the high school graduation class and hometown population of student-athletes and non-athletes. Both sources of information were collected so as to account for any differences that may have been related to high school size rather (Frantz, 1967) than athletic status. An investigation of the relationship of high school size and freshman academic achievement at Iowa State University (Huba, 1983) found that there was no significant correlation between size and college grade-point average or persistence. However, freshmen from high schools of different sizes, on the average, differed in high school rank, ACT score, MSAT score, Mathematics Placement Examination scores and choice of major.

High School Graduation Class Size For all but fifteen students, the graduation class size was reported on their high school transcripts found in their admissions files.

Hometown Population The population of each student's home city, as listed on his transcript, was taken from the 53rd edition of the Rand McNally Road Atlas "showing populations from 1970 Census and latest available estimate" (1977, p. 118).

Analysis

To test the first hypothesis concerning academic preparation, independent t-tests were used to identify any significant differences, at the .05 level, between student-athlete and non-athlete groups in mean high school rank, high school grade-point average, semesters of high school mathematics, ACT score and MSAT score. Differences in scores on the Mathematics Placement Examination could not be analyzed statistically because two different testing programs were in use between 1977 and 1980 and the nature of the latter program prohibits the application of statistics on the reported scores. Each academic preparation variable that differed significantly between the groups was identified for analysis of the third hypothesis.

The second hypothesis concerning academic performance was tested in the same manner. Independent t-tests were used to examine differences, significant at the .05 level, in mean cumulative college grade-point average, grades in required English courses taken, credit hours and courses dropped and repeated, all prior to beginning the third year. Each variable that differed significantly between the groups was identified for analysis of the third hypothesis.

The third hypothesis was tested by examining statistically significant variables of academic performance while controlling for all statistically significant, at the

.05 level, variables of academic preparation. The number of times analysis of covariance was performed was determined by the number of statistically significant variables of academic performance.

The fourth hypothesis was tested by comparing the students in the student-athlete and non-athlete groups after categorizing each student based on the number of changes in major (one, two, more than (2) made during his first two years. Significant differences between the groups were identified by using the chi-square test of independence.

The fifth hypothesis was tested by comparing the distribution of degree programs of the student-athletes and non-athlete groups after two years. Significant differences between the two groups were identified by using the chi-square test of independence.

The sixth hypothesis concerning the persistence rate was studied (1) by enrollment status, whether or not a student continued to be enrolled after two years of college, and (2) by academic status, whether the student was enrolled, has been dismissed, or had withdrawn from the university prior to beginning his third year of college. Differences were tested with the chi-square test of independence.

Size of graduating class and hometown population were examined in order to discuss the findings of the hypothesis

testing. Differences between the groups were tested with independent t-tests.

FINDINGS

In studying the academic performance of student-athletes playing football, six comparisons to non-athletes were made. The report of the findings are arranged in order of the hypotheses tested. Each section includes a description of both groups and the results of the comparisons between the groups of student-athletes and non-athletes, and, when data were available, the entire university population.

To test for significant differences between groups of student-athletes and non-athletes, comparisons were made to the t-distribution or the χ^2 -distribution at the .05 significance level. The t-test was used to test differences in variables assumed to be normally distributed and measured on the ratio scale. The standard error of difference and degrees of freedom used in the formula were dependent upon whether or not the variances of each group were equal. The Chi-square Test of Independence was used with frequency counts.

The acceptable level of significance throughout the analysis was .05 rather than .01, both commonly accepted levels in social science research, because it was believed that avoiding a Type II error, that is, failing to reject the hypothesis when it was indeed false, would be slightly more important than making the mistake of rejecting a true

hypothesis. Therefore, if there is a chance student-athletes are different in some ways from other students, deficiencies may be detected.

Academic Preparation

Hypothesis 1: There is no difference in academic preparation as measured by high school rank, high school grade-point average, semesters of high school mathematics, ACT score, MSAT score, and Mathematics Placement Examination scores between the groups of student-athletes playing football and male students who are non-athletes.

Significant differences ($p \leq .05$) in academic preparation did exist between the student-athletes playing football and the matched group of non-athletes entering Iowa State University in the Fall terms of 1977 through 1980. The group of student-athletes had a higher mean high school rank ($t(180) = -1.99$), lower mean high school grade-point average ($t(143) = 3.22$), lower average number of high school mathematics courses ($t(152) = 2.73$), and a lower mean ACT composite score ($t(161) = 2.44$). The difference in mean MSAT scores approached significance ($t(159) = 1.91$, $p = .058$). As reported in Table 3, the mean scores for each of these variables were lower (except in the case of high school rank where "one" is highest) for the student-athletes than the non-athletes.

It should be noted, parenthetically that, according to research conducted by The American College Testing Program, Iowa State University admits students who, on the average, are better prepared than students enrolling in other institutions (see Table 3). The mean ACT composite score for all students who entered ISU in 1977-1980 was 23.56. The national average, consisting of a 10% representative sample, for this period was 18.73. Both the student-athletes ($t(15222)=9.48$) and non-athletes ($t(15231)=5.59$) had significantly lower ($p \leq .05$) mean ACT scores than the general ISU student population. When compared to the student-athletes playing football and the matched non-athletes, ISU students were significantly better prepared with respect to mean high school ranks ($t(17682)=8.40$, $t(17682)=5.26$) and mean MSAT scores ($t(16106)=7.23$, $t(16115)=4.49$).

The results with regard to preparation in mathematics could not be analyzed statistically, as noted earlier, because two different testing programs were employed and only total scores were reported. Also, one program resulted in scores derived from each student taking two adjacent tests, the choice of the first depending upon the extent of the student's preparation, the second depending upon the score of the first. The numbers of student-athletes and non-athletes shown in Table 4 who took each test did not

TABLE 3. Measures of Academic Preparation of Student-Athletes, Non-Athletes and the General Student Population Admitted 1977-1980

Variable	Student-Athletes	Non-Athletes	General
High School Rank			
Mean	40.49	34.42	24.32
S.D.	21.08	20.11	18.29
n	91	91	17593
High School Grade-Point Average			
Mean	2.71	3.01	
S.D.	0.56	0.52	
n	90	55	
Semesters of High School Mathematics			
Mean	4.87	5.87	
S.D.	2.69	1.97	
n	84	82	
ACT Composite Score ¹			
Mean	18.69	20.84	23.56
S.D.	5.50	5.71	4.49
n	77	86	15147
MSAT Score ²			
Mean	31.91	35.84	41.43
S.D.	12.71	13.27	11.44
n	76	85	16032

¹Maximum score=36.

²Maximum score=75.

differ significantly ($\chi^2(9)=2.43$, $p \leq .05$). The mean test scores were similar, except the student-athletes tended to have lower mean scores on the trigonometry tests of all three series. The first algebra test of the latter examination also was more difficult for athletes. Overall, the student-athletes appear to have had less preparation in mathematics, although they may have done just as well in introductory algebra.

TABLE 4. Means and Standard Deviations of Mathematics Placement Examination Scores

Examination	Student-Athletes Non-Athletes		
Precalculus			
Algebra ¹	Mean	9.24	8.71
	S.D.	5.94	4.06
	n	17	21
Trigonometry ²	Mean	2.82	4.00
	S.D.	2.74	2.67
	n	17	21
Total Score ³	Mean	12.06	12.71
	S.D.	8.34	5.72
	n	17	21
Algebra-Trigonometry			
Algebra ⁴	Mean	11.83	12.20
	S.D.	7.02	5.41
	n	12	20
Trigonometry ⁵	Mean	1.92	3.37
	S.D.	1.68	2.27
	n	12	19
Algebra(1 or 2 semesters) ⁶	Mean	4.83	7.73
	S.D.	3.16	4.15
	n	27	26
Algebra(3 or 4 semesters with <'B' average)	Mean	7.61	8.40
	S.D.	4.44	3.66
	n	36	40
Algebra(3 or 4 semesters with ≥'B' average)	Mean	6.93	6.53
	S.D.	3.08	2.45
	n	14	17
Trigonometry	Mean	4.00	7.25
	S.D.	1.00	4.35
	n	3	4
Calculus	Mean		2.00
	S.D.		
	n	0	1

¹Maximum score=26.

²Maximum score=16.

³Maximum score=42.

⁴Maximum score=30.

⁵Maximum score=10.

⁶For each remaining test, maximum score=20.

The hypothesis that student-athletes playing football did not differ in academic preparation from non-athletes was rejected. There is support for the conclusion that student-athletes had significantly weaker high school preparation.

Academic Performance

Hypothesis 2: There is no difference in academic performance as measured by college grade-point average, course load, English grade, and number of courses dropped and repeated, after two years, between the groups of student-athletes playing football and male students who are non-athletes.

The student-athletes playing football and the matched non-athletes did not differ in academic performance during their first two years at Iowa State University (see Table 5). There were no significant differences ($p \leq .05$) between the athletes and non-athletes when mean college grade-point average ($t(157) = .21$), mean semester credit hours ($t(165) = -.70$) and mean number of courses dropped ($t(180) = -1.43$) or repeated ($t(180) = -1.51$) were examined. The difference in mean English grades approached significance ($t(144) = 1.94$, $p = .054$); however, Table 6 shows that there was no difference ($p \leq .05$) in the numbers of student-athletes and non-athletes who completed English courses within their first two years ($\chi^2(2) = .06$).

TABLE 5. Measures of Academic Performance After Two Years of Student-Athletes and Non-Athletes

Variable	Student-Athletes	Non-Athletes
College Grade-Point Average		
Mean	2.13	2.15
S.D.	0.55	0.82
n	91	91
English Grade		
Mean	2.17	2.38
S.D.	0.57	0.82
n	80	82
Semester Credit Hours		
Mean	47.18	45.29
S.D.	15.28	20.85
n	91	91
Courses Dropped		
Mean	1.81	1.48
S.D.	1.68	1.41
n	91	91
Courses Repeated		
Mean	0.95	0.67
S.D.	1.34	1.12
n	91	91

TABLE 6. Number of Student-Athletes and Non-Athletes Completing Required English Courses

Number of Courses	Student-Athletes	Non-Athletes
None	10	9
One	7	7
Two	74	75

Although, on the average, the student-athletes playing football did not perform differently from the non-athletes in their first two years in college, the student-athletes were significantly less variable in their performance.

There was a significant difference ($p \leq .05$) in the variances

of each group when college grade-point average ($F(90,90)=2.24$), average English grade ($F(81,79)=2.10$) and semester credit hours ($F(90,90)=1.86$) were compared. One can conclude that student-athletes performed more like each other in college than did non-athletes.

Academic Performance with Preparation

Hypothesis 3: There is no difference in academic performance between the groups of student-athletes playing football and male students who are non-athletes when controlling for academic preparation.

This hypothesis was to be tested if significant differences ($p \leq .05$) in college performance between the groups of student-athletes playing football and matched non-athletes were found. No differences in college performance were found. Therefore, there is no support for the idea that differences exist whether or not differences in preparation are controlled.

Curriculum

Hypothesis 4: There is no difference in the number of changes of major between the groups of student-athletes playing football and male students who are non-athletes.

Individual student-athletes and non-athletes made similar numbers of changes ($\chi^2(2)=0.12$) during their first

two years (see Table 7). Therefore, the hypothesis stating that there is no difference between the groups in the number of times majors are changed is not rejected. This study provides no support for the belief that the student-athletes make more or fewer changes in major than non-athletes.

TABLE 7. Number of Student-Athletes and Non-Athletes Who Changed Majors During First Two Years of College

Changes	Student-Athletes Non-Athletes	
	Student-Athletes	Non-Athletes
None	47	48
One	33	31
Two or more	11	12

Hypothesis 5: There is no difference, after two years, in the distribution among colleges between the groups of student-athletes playing football and male students who are non-athletes and initially are enrolled in similar academic programs.

As groups, the student-athletes and non-athletes differed significantly ($p \leq .05$) in their choice of college after two years ($\chi^2(5) = 16.53$). Therefore, the hypothesis stating that there are no differences in where student-athletes and non-athletes choose majors is rejected. The apparent difference resulted from a shift away from Engineering and Sciences and Humanities to Education and Home Economics. Table 8 and Table 9 show how many within

each group were enrolled, at the beginning and after two years (or whenever they left school), in each college.

TABLE 8. Number of Student-Athletes Enrolled in Each College Upon Entering and After Two Years¹

College	First Year	Third Year
Agriculture	8	7
Engineering	15	11
Home Economics	1	6
Sciences & Humanities	45	40
Education	21	26
Design	1	1

¹If students left school before their third year, last college in which they were enrolled was reported.

TABLE 9. Number of Non-Athletes Enrolled in Each College Upon Entering and After Two Years¹

College	First Year	Third Year
Agriculture	7	8
Engineering	16	13
Home Economics	0	1
Sciences & Humanities	56	56
Education	10	9
Design	2	4

¹If students left school before their third year, last college in which they were enrolled was reported.

Persistence

Hypothesis 6: There is no difference in the persistence rate between the groups of student-athletes playing football and male students who are non-athletes.

The attrition rate of the groups of students was determined by (1) whether or not they continued to be enrolled after two years (see Table 10), and (2) their academic status after their first two years (see Table 11). There was no significant difference ($p \leq .05$) in enrollment status between the student-athletes and non-athletes ($\chi^2(1)=2.39$). The distribution of student-athletes by academic status did not differ significantly ($p \leq .05$) from the non-athletes ($\chi^2(2)=3.32$). Therefore, there is no reason to believe that, as a group, student-athletes playing football withdraw from, are dismissed from or continue in school in different proportions from non-athletes of similar academic intentions. The hypothesis stating that there is no difference in the attrition rate between the groups of student-athletes playing football and non-athletes is not rejected.

TABLE 10. Enrollment Status of Student-Athletes and Non-Athletes by Number of Enrolled

Number of Years	Student-Athletes	Non-Athletes
≤2	18	27
>2	73	64

TABLE 11. Academic Status of Student-Athletes and Non-Athletes After First Two Years

Status	Student-Athletes Non-Athletes	
	Student-Athletes	Non-Athletes
Enrolled	73	64
Withdrew	12	14
Dismissed	6	13

Background Variables

In order to better discuss these results, two background variables were compared also. The mean graduation class sizes and mean hometown populations for the groups of student-athletes and non-athletes were examined. On the average, there was no significant difference ($p \leq .05$) between the groups in class size ($t(165) = -0.77$) or hometown population ($t(162) = 1.35$). This supports the assumption that, whatever differences were found between the student-athletes and non-athletes, they probably cannot be explained by size of high school or community.

Summary

Based on the results of this study, the researcher rejected two hypotheses, failed to reject three hypotheses and did not find it necessary to test one hypothesis. These findings support the belief that student-athletes playing football at Iowa State University arrived with different academic preparation than similar non-athletes and, over

time, enrolled in different curricula. There is no support for the belief that student-athletes do less well in college, change their choice of major more or less often, or persist at a different rate.

DISCUSSION

Summary

National attention has been focused on the education of student-athletes. Contrary to empirical evidence, the assumptions have been made that educators and coaches have failed these students and that student-athletes are graduated from high school without basic skills and continue through college without benefitting from college-level work. Not only are student-athletes believed to be weaker students, they are suspected of juggling their schedules and moving from one school to another in order to remain athletically eligible. The purpose of this study was to investigate the assumptions that intercollegiate student-athletes arrive less prepared academically and continue to fall behind their classmates.

Football players, in particular, have been identified by the public and in the academic literature as suffering from a lack of proper education (Frantz, 1967; Purdy et al., 1981; Snyder, 1978). In this study, a comparison of football players with a group of non-athletes provided a standard by which the academic abilities of student-athletes playing football could be judged. A group of non-athletes was matched with a group of football players by year of entry into the university, race, and academic discipline

upon entering. The process of matching controlled for race (Brigham, 1981; Green et al., 1974; Picou, 1978; Purdy et al., 1981; Spivey & Jones, 1975) and field of study (Frantz, 1967; Parsons, 1969; Spivey & Jones, 1975; Wang, 1971), which may be related to academic performance. This comparison helped to evaluate the impact of participation in intercollegiate athletics on academic success.

Differences in academic preparation, performance, curriculum and persistence between student-athletes, receiving scholarships as freshmen to play football at Iowa State University in the Fall terms of 1977 through 1980, and a matched group of non-athletes were tested for significance. As measured by high school rank, high school grade-point average, number of semesters of mathematics, and ACT score, the student-athletes were significantly ($p \leq .05$) less prepared academically than the non-athlete group. The difference between the groups of student-athletes and non-athletes in Minnesota Scholastic Aptitude Test scores approached statistical significance ($p = .058$); the Mathematics Placement Examination scores, although analyzed with descriptive rather than inferential statistics, demonstrated weaker academic preparation on the part of student-athletes.

The student-athletes were statistically similar ($p > .05$) to the non-athletes in their first two years of college

performance as measured by college grade-point average, number of credit hours, grades in required English courses, and number of courses dropped and repeated. The student-athletes changed their majors no more often than the non-athletes, but the student-athletes demonstrated a slightly greater tendency to shift toward majors in Education and Home Economics and away from Sciences and Humanities and Engineering. There was no significant difference in the rates of persistence between the groups of student-athletes and non-athletes. Also, there were no differences in high school size and hometown population between the groups.

The findings, therefore, showed that, as a group, student-athletes playing football at Iowa State University were less well prepared than the matched non-athletes and tended to shift to majors in different colleges than non-athletes. However, the groups of student-athletes and non-athletes performed similarly after entering the university. Both groups also changed majors and persisted in a like manner during their first two years at Iowa State University. The two conclusions that can be drawn from this study of intercollegiate football players, among the least prepared of student-athletes (Frantz, 1967; Purdy et al., 1981; Snyder, 1978), are that student-athletes may enroll in college with weaker preparation, but they perform as well academically as matched non-athletes and satisfactorily meet

university and NCAA standards.

Conclusions

This investigation of the academic performance of intercollegiate football players supports the work of previous research (Braddock, 1981; Hanks & Eckland, 1976; Smith & Dizney, 1966; Snyder, 1978; Wang, 1971). The main finding is that a group of athletes playing NCAA Division I-A football performed as well academically in their first two years of college as a matched group of non-athletes. The comparable performance occurred in the face of evidence of a significantly lower level of academic preparation of the athletes. In order to account for this result, the influence of racial background, academic interests and support services should be examined.

Based on the finding that the groups of student-athletes and non-athletes differed upon arriving at Iowa State University, this study supports the belief that there is a negative relationship between athletic participation and academic preparation. Also, in comparing measures of academic preparation, the group of matched non-athletes differed significantly ($p \leq .05$) from the general university population at Iowa State University. Therefore, the matching produced differences between the non-athlete group and the general student population, suggesting that there is

a relationship between racial background and educational interests and academic preparation.

At the time covered by this study, the percent of minority students, primarily black students, at Iowa State University was three percent of the entire student population according to the Office of Minority Student Affairs (Note 2). The student-athletes and matched non-athlete groups were one-third black. This difference in minority representation may be related to academic preparation.

After two years, student-athletes, when compared to the matched group of non-athletes, were more likely to have transferred to the colleges of Education and Home Economics and out of the colleges of Sciences and Humanities and Engineering. Even at the beginning of this study, more student-athletes than non-athletes were enrolled in Education (see table 8 and table 9). Insight into the relationship between major and academic preparation is better understood in light of a description of students enrolled in these four colleges at Iowa State University.

The Student Affairs Research Office reported statistics, for each college within ISU, of all students who completed a minimum of twelve credit hours during their first semester (Note 3). An analysis of mean high school ranks, ACT scores and MSAT scores revealed significant

differences ($p \leq .05$) among students enrolled in each college. Application of one-way analysis of variance and the Scheffé Multiple Range test found that students enrolled in all four colleges, with the exception of Home Economics and Sciences and Humanities, differed in mean high school ranks ($F(3,9999)=78.57$). Each of the four colleges differed from each other in mean ACT scores ($F(3,9410)=514.91$) and mean MSAT scores ($F(3,9828)=147.76$). For each variable, Education majors, as a group, were less well prepared academically than those enrolled in Home Economics, Sciences and Humanities, and Engineering.

The adequate academic performance and weak academic preparation may be accounted for by the extra personal attention and academic support services provided student-athletes. The student-athletes maintained similar grades and course loads as the non-athletes. Also, as measured by the number of changes of major and of required English courses taken, student-athletes appeared to have been making similar progress toward a degree as the non-athletes. The Iowa State University Department of Athletics, like a majority of athletic departments within the NCAA Division I, provides academic monitoring, general academic advising, tutoring, and structured study time for their athletes (Gurney, Robinson, & Fygetakis, 1983). At Iowa State University, the Office of Minority Student Affairs and the

TABLE 12. Variables of Academic Preparation by College for 1977-1980¹

College	HSR	ACT	MSAT
Education			
Mean	27.45	20.60	36.07
S.D.	18.06	4.38	10.68
n	602	526	528
Home Economics			
Mean	22.52	21.67	39.76
S.D.	16.55	4.23	10.75
n	1079	945	986
Sciences and Humanities			
Mean	21.76	24.17	43.49
S.D.	17.82	4.15	11.25
n	5475	4777	5079
Engineering			
Mean	17.84	26.09	45.34
S.D.	14.82	3.40	10.73
n	3583	3162	3235

¹Includes only students who completed a minimum of twelve credit hours during their first term.

Student Counseling Service provide these same services to non-athletes. The differences though are in the delivery of the service and the motivation of the students. The student-athletes are already in a group, and participation in a "study table" is a requirement for their athletic scholarship.

Being in this group may have been productive only for the weaker students among the athletes. The finding that the student-athletes were less variable in college grade-point averages, English grades and semester credit hours

than the non-athletes suggests that the weaker students among the athletes were helped, but the better students did not progress in a similar manner. The desire to maintain athletic eligibility and the time commitment given to football provided the student-athletes with common goals, making them perform more alike than the non-athletes. Support may have been provided selectively or the better students were advised to devote minimum attention to academics.

The similar persistence rates of the student-athletes and non-athletes during the first two years also may be related to the added academic support and the students' satisfaction with the institution. Student-athletes are likely to be satisfied with their friendships with other students and the administration (Astin, 1979), as well as with their athletic experience (Hanks & Eckland, 1976; Parsons, 1968; Snyder, 1978). However, another study reported that athletes are likely to leave an institution for non-academic reasons due, directly or indirectly, to their athletic participation (Frantz, 1967). If both phenomena are occurring, they may be offsetting each other for at least student-athletes playing football.

According to the results of this study a group of students with special needs (student-athletes) is arriving at the university and could benefit from assistance provided

by athletic department and student affairs staffs. Student-athletes playing football at ISU, as a group, arrived less well prepared, consisted of a higher percentage of black students and tended to enroll in different colleges when compared to other ISU students. However, they demonstrated the potential to be adequate college students, that is, receive similar grades, maintain a comparable course load, change their schedules as often, and take core courses early. According to the results of a survey, only 55% of the NCAA Division I institutions have one of more staff members assigned to academic services within the athletic department. Almost one-third of these are coaches, not professionally trained counselors (Gurney et al., 1983). The authors reporting these results believed this represents an improvement over what historically has been offered, but much more needs to be accomplished.

In addition to academic support, a clear statement must be made about why the support is necessary so as not to "undermine the student athlete's academic credibility or his confidence" (Zingg, 1982, p. 17). Weaker preparation, a demanding activities schedule which is required for financial assistance, and a limited vocational outlook (as represented by more narrow academic interests within the group) should be acknowledged and addressed with sensitivity to the individual. These weaknesses may have arisen from a

pattern of neglect of academic development due to the early demands of extracurricular athletic activities (Astin, 1979; Hauser & Lueptow, 1978).

The institutional commitment required to bridge the gap between the goals of education and of intercollegiate athletics could benefit all students, athletes and non-athletes. Some individual sports and women's sports have not yet been affected by the big business atmosphere. Obviously as these sports become more popular, these student-athletes should be studied and assisted. Attracting and retaining students are important activities to higher education in the 1980s. The support services and accompanying philosophy applied to student-athletes could be a model for other targeted groups of students. The common characteristics of these groups could include (1) arriving with poor academic preparation and (2) representing a type of student not commonly found on campus, such as minority students and foreign students.

Recommendations

The purpose of this study was to describe the academic performance of student-athletes in such a way as to identify academic weaknesses different from those of non-athletes prior to enrolling and during their first two years of college. An examination of those playing football was used

because past research indicated they belonged to a subgroup of student-athletes with academic deficiencies (Frantz, 1967; Purdy et al., 1981; Snyder, 1978). The review of the literature also suggested that comparison to a matched group of non-athletes would provide a way of separating the relationship between academic performance and athletic participation from the relationships of race and academic interests to academic performance. Restricting this study to the first two college years, limiting it to football players at ISU, and selecting the non-athlete sample by race and major yielded findings that suggest further research.

This study intentionally did not examine graduation rates because the focus was on early academic success, which is often overshadowed by reports of graduation rates. The emphasis was on whether or not the athlete had sufficient ability to be a student without judging his reasons for enrolling in college. However, as was hypothesized by Hauser and Lueptow (1978) about athletic participation in high school, athletes may be lagging behind non-athletes in their academic performance. Also, the better students among the athletes may not be improving in a similar manner to the weaker students. One recommendation is to replicate and extend this research, examining academic success after three, four, five, and six years. At that time, graduation rates could be included and the effects of "redshirting",

the professional football drafts, progress toward a degree and vocational decision-making could be investigated.

Another recommendation is that future research be designed to include more years or more athletes, such as combining football and basketball players. Studying only football players kept the sample size of student-athletes small. This prohibited statistically analyzing interaction because subdivisions of the sample would have been too small from which to draw meaningful conclusions. Selecting the sample from many institutions has the benefit of a larger sample size and increased generalizability of the conclusions. However, this would increase the difficulty of identifying non-athlete matches.

Another area of research that is recommended is that of the relationship between academic program and academic success. Student-athletes tended to distribute themselves in colleges differently than non-athletes. This made achieving an exact match on major difficult, expensive and ultimately impossible. A decision in all further research needs to be made about the importance of this variable before investing the resources to include it in a study. However, replicating this study using an exact match would account for any differences found here due to initial dissimilarities between the groups.

Future studies should include research into the

benefits of athletic participation. Students who may not have considered obtaining a college education or who arrived at college ill-prepared and were not identified as needing support could profit from the findings. Further study into why students choose and succeed in certain extracurricular activities and their connection to academic success is warranted.

A final recommendation is that steps be taken to inform others of the influence of intercollegiate athletics on students. This is an area that needs objective analysis and reporting. The statement concerning why support services are needed should be accompanied by accessible data, intra- and inter-institutional research, and press releases aimed at educating the families, high schools, faculty, and interested public. These messages would negate the "dumb jock" stereotype and explain the difficulties of being a student while being an athlete, especially for blacks.

Our society does its level best to see to it that the athlete arrives at the college door both educationally and culturally disadvantaged. Thus when the disadvantage of minority group status is added to the mix, the urgency of the matter is doubled (Zeigler, p. 420, 1972).

More theses and dissertations should be published. Presentations and discussions in a wide range of professional organizations should be conducted.

The urgency expressed by Zeigler (1972) presents a challenge to athletic departments, student services, and

academic administrators in colleges and universities. It is incumbent on them to provide a supportive environment to the student-athletes who are admitted, often with weak academic preparation. Only through implementing academic support programs, conducting research, and publicizing the results does higher education have the opportunity to displace the "big business" atmosphere of intercollegiate athletics with a clearly visible educational mission.

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DEDICATION

This research is dedicated to the memory of
Philip Tripp, Ph.D.,
an intelligent and sensitive teacher and practitioner
of student personnel work.
His words were with me throughout my doctoral work.

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