Academic Performance and Time Allocation of Athletes at a NCAA Division III Women's University

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Academic Performance and Time Allocation of Athletes at a NCAA Division III Women's University

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Abstract
Prior investigations of the academic performance of student athletes have yielded mixed results: while the NCAA's large scale surveys point to classroom success, other researchers have documented academic underperformance by student athletes. The purpose of this study was to examine the grades and the time budgets of student athletes at a NCAA Division III university for women. Results indicated that athletes earned higher grades in anatomy and physiology and had higher cumulative grade point averages than their non-athlete peers. Surveys suggested that, during the season, these student athletes typically spent about 20 hours per week on athletics and a similar amount of time on academics. While they viewed this time allocation as nearly ideal, faculty members thought students should be spending twice as much time on academics as they do on sport. Implications for student advising and faculty attitudes toward athletes are discussed. https://doi.org/10.21692/haps.2018.026

Key words: athletics, athletes, grades, NCAA

Introduction
Many college educators are concerned about resource allocation to athletic programs and the ability of student athletes to balance their efforts between sports and academics. Much of the media attention and research on these topics have focused on the athletically elite, the National Collegiate Athletic Association (NCAA) Division I. However, there are more athletes in NCAA Division III, and athletes make up a much higher percentage of enrolled students at Division III schools (26%) than at Division I institutions (4%) (NCAA 2018a). Division III schools are not allowed to offer financial scholarships for athletics, but some educators worry that the emphasis on sports at many smaller schools is influencing admissions unfairly and compromising the academic enterprise (Strauss 2017, Beaver 2014, Bowen and Levin 2003). Others argue that athletics is helping a variety of colleges draw and retain disciplined, capable, diverse students (Miles 2015, Horton 2009, Melendez 2006, Mendoza *et al.* 2012).

The effects of intercollegiate sports participation on a student's academic work are debatable. Involvement in athletics might enhance academic achievement by fostering disciplined study habits as well as providing the cognitive and emotional benefits that have been frequently demonstrated for exercise (see Buckworth *et al.* 2013). Indeed, some researchers report higher grade point averages (GPAs) or higher retention rates among athletes compared to their non-athlete peers (Horton 2009, Mendoza *et al.* 2012, Baucom and Lantz 2001). Also, the NCAA regularly publishes reports pointing to success among student athletes, claiming "…on average NCAA student-athletes graduate at a higher rate than the general student body" (NCAA 2018a). However, the NCAAs methods have been criticized since their sample of the general student body includes part-time students while their sample of athletes does not (Eckard 2010). Furthermore, some studies have found evidence for negative effects of athletic participation on academics.

The College Sports Project, a large scale, multiyear study, found significant academic underperformance by Division III athletes, even when factoring in disparities such as incoming test scores (Emerson 2012). Similarly, other researchers have found lower GPAs among athletes (Bowen and Levin 2003, Maloney and McCormick 1993) or mixed results (Robst and Keil 2000). Some of the variation in results stems from the observation that athletes in higher profile sports (*e.g*. football and basketball) show more substantial academic underachievement (Maloney and McCormick 1993, Emerson 2012). Another source of variation in athlete to non-athlete comparisons is that, unlike male athletes, female athletes have been found to perform academically as well as non-athlete students (Johnson *et al*. 2010, Kane *et al.* 2008). In addition, examining cumulative GPAs can be problematic, as there are also reports that student athletes cluster within certain majors (Malekoff 2005), and it is possible that the coursework taken by athletes varies in difficulty from that taken by non-athletes, hence the pejorative description of introductory geology as "rocks for jocks".

To understand how athletic participation might influence academic achievement, investigators examined student athletes' schedules for school and sports. Athletes often report that they are better students during their highly structured sports season than they are out of season, but there is little evidence to support this (see Scott *et al.* 2008). Instead, it might be argued that their large time expenditure on athletics during their sport's season could negatively impact their grades. These effects can be difficult to study, as student-athletes might register for fewer classes during semesters when their sports are in season.

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There have been several surveys examining student-athletes' balancing of academics and sport. In reply to the NCAA "GOALS" surveys, many student-athletes report spending upwards of 30 hours per week on athletic commitments; they also report missing slightly more than one class per week on average (NCAA 2016). A high percentage of athletes (a majority in some surveys) indicate that they do not spend as much time on academic work as they would like, and that they at least "somewhat agree" that they see themselves more as athletes than as students (Jolly 2008). However, the NCAA's survey data indicate that student athletes spend more time on academics than athletics (NCAA 2016), and some researchers find that athletes spend more time on coursework than non-athlete peers (Miles 2015). In addition, Umbach *et al.* (2016) found that student athletes were equally, if not more, academically engaged than non-athlete students.

How should we view our institutions' and our students' investments in intercollegiate sports? How should we advise students pursuing challenging academic programs while participating in athletics? To help inform these discussions, this article examines the grades and time budgets of student athletes at a women's university that competes in NCAA Division III. By comparing female student athletes to their all-female peers, our sample (admittedly one of availability) eliminates the confounding effect of gender on academic achievement, which is that on average females academically outperform males (Johnson *et al.* 2010). We made cumulative GPA comparisons of all university athletes and non-athletes at our university to enhance the ability to generalize from our study by providing a large sample size. In addition, we make detailed analyses of a large set of anatomy and physiology grades. Most of the student athletes at St. Catherine University list the allied health professions or exercise science as their major on their university webpage biography. We chose to examine the grades in anatomy and physiology because our two-semester sequence of integrated anatomy and physiology is a foundation course for the health care professions and as such, is taken by the majority of student athletes. This provides us with a healthy sample size while controlling for course difficulty and makes it possible for grades to be compared for athletes versus non-athletes within the same classes. The frequent quizzes and tests in our anatomy and physiology classes also allow us to analyze athletes' performance during, and outside of, their sport's season.

To determine if recruitment of athletes was diluting the academic strength of our university's student body we examined athletes' American College Test (ACT) scores. To help determine if participation in college sports influenced academic performance, we compared college grade point average (GPA) to ACT scores for athletes and non-athletes. Finally, to examine time budgeting, we surveyed athletes, coaches, and faculty members with respect to student athletes' time spent on sports and on academic study.

Methods

Academic Performance Study Methods

After obtaining approval of the study from the St. Catherine University Institutional Review Board (IRB Protocol #488), one of the author's (JP) anatomy and physiology class rosters from 2009-2015 (data available from ten semesters) were compared with the published rosters of all the university's athletic teams, which were archived on teams' websites. To identify students who participated in athletics for those semesters, anyone listed on the roster of a team that was active during a given semester was categorized as an athlete. Generally students take these classes during the two semesters of their sophomore year. Athletes' final course grades (on a 100% scale) were then compared to those of students who were not active in athletics that semester. Ninety-four course grades for athletes were compared to 761 grades for students who were not active athletes during those terms.

A broader, university-wide comparison of athletes' grades to non-athletes grades in all coursework was also conducted. Using a large data set provided by the University's Institutional Research Office (which regularly tracks athletic status and grades), we examined the cumulative GPAs (on a 4.0 scale) at the end of the last semester available for all bachelor's degree seeking students who began their first year of college at our university. GPAs for student athletes who transferred to our university or who discontinued athletic participation were not considered. GPAs from fall 2009 through spring 2017 were analyzed (n = 2770 non-athletes, 432 athletes) and, when available, their American College Test (ACT) composite scores were also compared (n = 2584 non-athletes, 415 athletes).

More temporally detailed analysis examined if student athletes' academic performance changed when they were in season, versus out of season, for their sport. Since our anatomy and physiology class involves one or more assessments each week, the grades of 35 student athletes for whom we had two or more test or quiz scores in both the in-season and out-of-season conditions were examined in a within-subjects manner. Averages of all of the students' scores in-season were compared to averages of all their scores out of season, with each quiz and test score normalized to the mean score for the entire class on that particular assessment (in other words, if there score was exactly equal to the class average for a given test, it was scored as 1.0 in our analysis). Seasons were defined by the detailed archived athletic schedules on each team's website. These data were from 2013-2017 (4 academic years).

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Time Allocation Study Methods

During the 2015-16 academic year, we surveyed community members (26 athletes, 6 coaches, 10 faculty members) about their perceptions of student athletes' time commitments to athletics and academics. Consent was obtained verbally and paper surveys were distributed on campus, as per the IRB-approved protocol. Using a fill-in-the-blank form, we asked respondents to estimate the number of hours a student athlete devoted to athletics and academics when that athlete's sport was in season and when the sport was out of season. We also asked what they thought the ideal number of hours spent on sport and academics would be.

Results

Grades

Student athletes' course grades in anatomy and physiology were slightly but significantly higher than those of non-athletes as shown in Figure 1A (two-tailed t-test $p = 0.038$; Cohen's effect size, $d = 0.24$). The mean course average for athletes was 82.0% (s.d. = 9.81) while that of non-athletes was 79.5% (s.d. = 10.87). This finding was corroborated and extended by looking at the cumulative GPAs (all coursework; see Figure 1B) of 3,202 students, where the mean athlete GPA of 3.35 (s.d. = 0.53) was significantly higher than that for non-athletes, which was 3.07 (s.d. = 0.73). This result was highly significant (t-test $p < 0.001$) and had a moderate effect size (Cohen's $d = 0.43$).

Student athletes' incoming ACT scores ($n = 416$) were slightly but significantly higher than non-athletes' ($n = 2,632$), with a mean composite score of 23.3 (s.d. = 3.58) for athletes versus 22.3 (s.d. = 3.82) for non-athletes (two-tailed t-test $p < 0.001$; Cohen's $d = 0.26$). Thus it did not appear that recruitment of students with athletic prowess weakened the academic preparedness of classes entering our university. When athletes' collegiate academic performance was expressed as cumulative GPA divided by ACT, their performance was still slightly better than non-athletes (Figure 2), indicating that athletic participation did not lead to lower than expected grades, and instead may have enhanced academic success; athlete mean = 0.147 (s.d. = 0.026), non-athlete mean = .140 (s.d. = 0.035; t-test $p < 0.001$; Cohen's $d = 0.20$).

Regarding academic performance in anatomy and physiology within, versus outside of, sports seasons, there appeared to be a slight trend toward higher grades when students were not in season. Twenty-one out of 35 student athletes performed better (relative to the class average) when they were outside of their season compared to when they were in season, but these data did not reach significance in a two-tailed, repeated measures t-test (Figure 3; $p = 0.099$). It should be noted that even when they were in-season, mean athletes' grades were higher than the overall class averages.

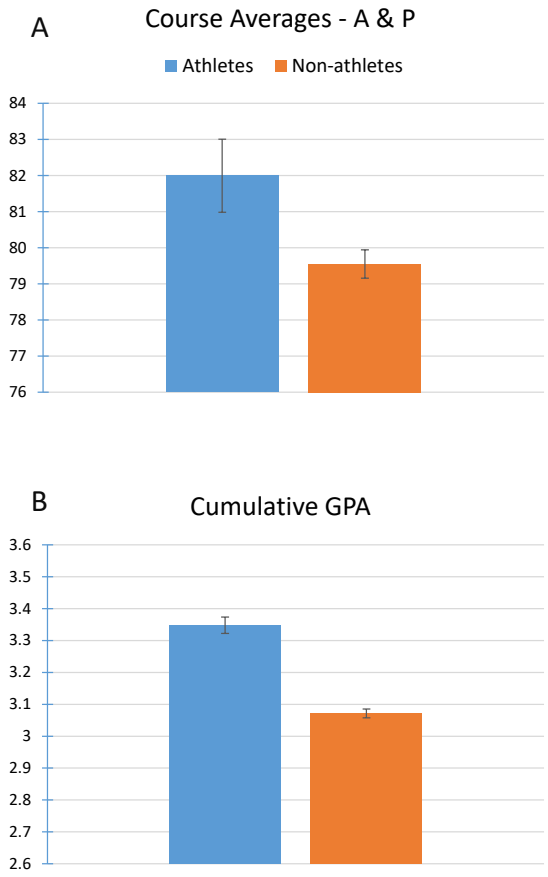

Figure 1. *A. Athletes' mean final course average for anatomy and physiology was 2.4 percentage points higher than that of non-athletes (81.9% vs. 79.4% with SE bars plotted; $p = 0.038$). B. Mean cumulative GPA in all coursework was also higher for athletes (3.35 vs 3.07 with SE bars plotted; $p < .001$).*

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Time allocation

Perceptions of the way student athletes budget time are summarized in Figure 4. Student athletes estimated that they spent an average of 19.8 hours on athletics when they were in season and about one hour less than that per week on academics. When not in season, the mean number of hours athletes estimated they spent on sports was 9.0 and the mean number of hours estimated that they spent on academics was 22.2 (data are not graphed). Faculty members and coaches were fairly accurate in their estimates of student time dedication to sports. There were no significant differences between student, faculty, and coach estimates of time allocation for athletics in or out of season. However, coaches thought their student-athletes were spending significantly more time on academics than other respondent groups, as they estimated an average student allocation of 33 hours of schoolwork each week (ANOVA $F = 5.29$; $p = 0.009$; Tukey pairwise comparisons $p < .05$).

When responses to the questions about ideal time allocation were expressed as quotients (the number of hours spent on academics divided by the number of hours spent on athletics) significant differences emerged between groups (one-way ANOVA $F = 7.84$; $p = 0.001$). Post-hoc Tukey tests revealed that faculty's judgment that student athletes should ideally spend more than twice as much time on academics as they do on athletics was significantly ($p < .01$) larger than students' ideal ratio which was roughly 1:1. (Cohen's effect size $d = 1.09$).

Discussion

Within the anatomy and physiology class and across all coursework at our university, the academic performance of athletes in this study exceeded that of non-athletes. Past studies of this type have yielded varied results and have indicated that the academic success of athletes differed when competition level, sport, and gender were analyzed. Specifically, male, Division I athletes participating in high-profile sports (football and basketball) tended to have lower grades and graduation rates than athletes in other demographic groups (Bowen and Levin 2003, Johnson *et al.* 2010, Emerson 2012, Robst and Keil 2000). So it was perhaps not surprising that athletes at our institution, a women's university that competes in Division III, were academically successful. Another sampling issue that we considered was whether struggling students had been eliminated from our athlete group because they became ineligible, thereby skewing our data toward academically successful athletes. An interview with our university's athletic director suggested that this was unlikely, as very few of our athletes (under 1%) had been declared academically ineligible during the study's time period. Still, it was possible that some academically struggling athletes voluntarily left their sport in order to focus on schoolwork.

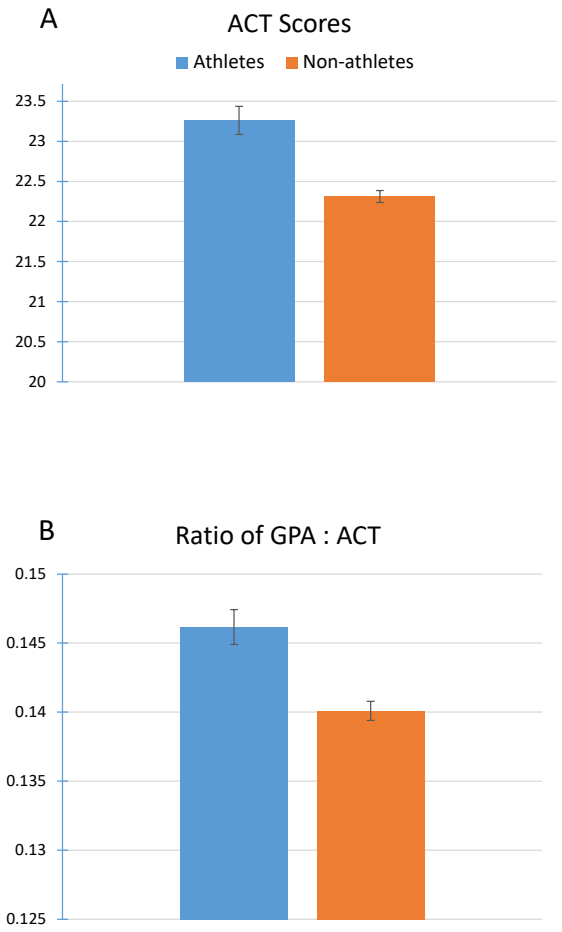

Figure 2. *A. The mean ACT score of athletes was higher than that of non-athletes (23.3 vs. 22.3 with SE bars plotted; $p < .001$). B. Mean cumulative GPA divided by ACT was also higher for athletes (0.146 vs. 0.140) with SE bars plotted; $p < .001$).*

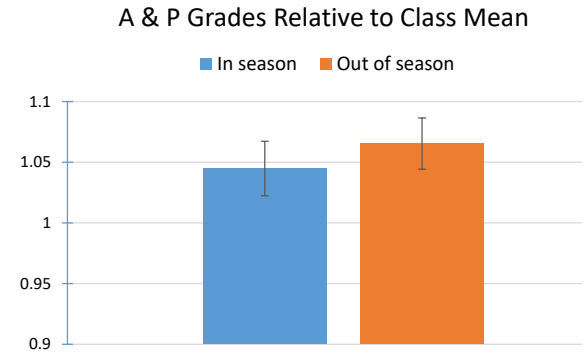

Figure 3. *A. Athletes' grades tended to be slightly higher when their sport was not in season (means and SE bars; $p = 0.99$).*

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This study specifically sought to examine whether the decision to participate in athletics might influence a student's academic success, not just whether athletes were stronger students when they arrived at university. While athletes' mean ACT scores were higher than those of non-athletes, the ratio of their GPA-to-ACT was also significantly higher than that of non-athletes, suggesting that participation in athletics may have facilitated their scholastic achievement. Still, athletes should be advised to plan their course schedules carefully, as our findings with anatomy and physiology grades suggested there might be a slight decline in academic performance when their sport is in season. If we had chosen to run a one-tailed t-test, the different anatomy and physiology grades during athletes' competition season would have met the $p < .05$ criterion for statistical significance. Our findings of modestly lower grades in-season are consistent with those of Scott *et al.* (2008) for collegiate athletes and with those of Shultz (2017) for varsity high school athletes.

The high level of academic success of athletes seen in this study may be related to many factors, including the cognitive benefits of exercise, enhanced engagement in college life with team membership, or perhaps a correlation with higher economic status *i.e.* it is possible that throughout their development, athletes' families were better able to afford investments in athletics and education than families of non-athletes (Horton 2015). Future studies might examine these issues by asking athletes and non-athlete students about family income and the number of hours per week they spend at jobs to earn wages.

Ideally, all stakeholders would endorse the NCAA's motto that college athletes are "students first, athletes second" (NCAA 2018b, Vanover and DeBowes 2013). To put this philosophy to the test we should continually examine the time investments of student athletes. Although the NCAA has long had a 20-hour-per-week rule to limit the time spent on athletics, many activities (*e.g.* individual workouts) do not count toward that limit. In our results, student athletes reported spending about twenty hours per week on athletics when they were in-season, and this was one hour more per week than they reported spending on academics. While athletes appeared to be succeeding academically relative to peers, questions regarding how well they fulfilled their academic potential remained largely unaddressed, although the ACT data suggest they are not underachieving relative to peers. As indicated above, our student athletes appeared to score a little higher in anatomy and physiology when they were out of season. This might be related to the increased time they report spending on academics (22.2 hours/week out of season versus 18.8 hours/week in season). However, our survey was given at one point in time, and the respondents' recall of actual hours spent might not have been as accurate as we would hope. Regarding estimates of

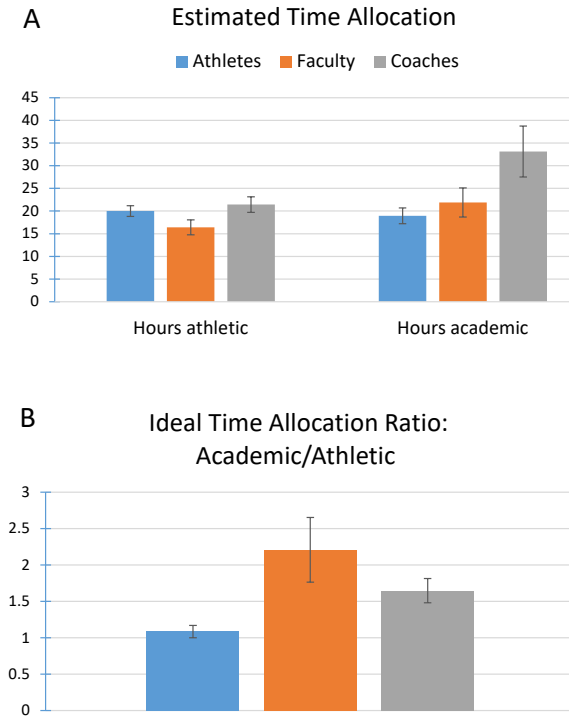

Figure 4. *A. Means of responses (with SE bars) to surveys regarding the number of hours per week student athletes spend on athletic and academic pursuits during their sports' seasons. B. Means of responses (with SE bars) to surveys regarding the ideal number of hours student athletes should spend on athletic and academic pursuits (expressed as ideal number of hours spent on academics divided by ideal number of hours spent on athletics). Faculty's ideal ratio was significantly larger than that of student athletes ($p < 001$).*

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ideal time budgets, it was not surprising that faculty members indicated that it would be better if athletes spent more time on academics than they currently do.

In sum, educators would do well to reject stereotypes about the academic weakness of athletes (see Baucom and Lantz 2001). Many athletes succeed in challenging courses such as the anatomy and physiology courses examined in this study. Our analysis of a fairly large data set finds that the GPAs of Division III athletes across our university exceed those of non-athlete students. To facilitate continued success, instructors, advisors, administrators, coaches, and students should engage in data-rich discussions about time management.

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About the Authors

John Pellegrini, PhD, is a Professor of Biology at St. Catherine University where he has taught Human Anatomy and Physiology for twenty-four years. His academic interests include pedagogy, the history of anatomy and physiology, and the biology of emotion.

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