

**Canadian Intercollegiate Sport Involvement: Clustering and**

**Academic Achievement Revisited**

**Participation aux sports universitaires au Canada :**

**Nouveau regard sur le regroupement et le rendement scolaire**

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**Abstract**

This paper explores the effects of intercollegiate sport involvement on academic clustering and academic attainment at a Canadian university. The results show that a high percentage of athletes in flagship sports (those with a full-time coach) are academically registered in one faculty. Academically, male flagship sport athletes underperformed in comparison to other students. The other male varsity athletes (those in lower profile sports) fared much better academically than both flagship sport athletes and non-athletes. Among females, both types of athlete were higher in academic attainment than non-athletes. Non-flagship sport athletes were superior academically on all three measures of attainment. Overall, our results for males indicate negative effects for flagship sport athletes and positive effects for other athletes. We suggest that the level of time commitment expected of flagship sport athletes is higher than for other athletes and might result in less time being available to devote to schoolwork.

***Résumé***

*Cette étude examine les effets de la participation aux sports universitaires sur les regroupements universitaires et la réussite scolaire dans une université canadienne. Les résultats démontrent qu’un fort pourcentage d’athlètes engagés dans des sports vedettes (avec un entraîneur à temps plein) sont inscrits dans une faculté. Sur le plan de la réussite scolaire, le rendement des athlètes s’adonnant à un sport vedette était inférieur à celui des autres étudiants. Les autres athlètes universitaires masculins (ceux engagés dans des sports moins prestigieux) obtenaient des résultats scolaires nettement supérieurs à ceux des athlètes engagés dans des sports vedettes et à ceux des non athlètes. Chez les femmes, les deux catégories d’athlètes obtenaient de meilleurs résultats scolaires que les non athlètes. Par ailleurs, le rendement des athlètes actifs dans des sports non vedettes s’avérait supérieur à la lumière des trois mesures de réussite scolaire. Somme toute, les résultats chez les hommes démontraient les effets négatifs sur les athlètes actifs dans des sports vedettes et des effets positifs sur les autres athlètes. Les auteurs sont d’avis que les athlètes qui s’adonnent à des sports vedettes sont appelés à consacrer beaucoup plus de temps à leurs activités sportives que les autres athlètes. Par conséquent, ils pourraient avoir moins d’heures à investir à leurs études.*

**Introduction**

There have only been a few previous studies of the academic achievement of Canadian intercollegiate athletes (Curtis & McTeer, 1990; Curtis & McTeer, 1999; Danylchuk, 1995; Martens, 1985). As reviewed below, this relative lack of research attention contrasts with the U.S. where the relationship between sport participation and academic attainment has been extensively investigated (Capriccioso, 2006; Carodine, Almond & Gratto, 2001; Davis & Cooper, 1934; Finley & Fountain, 2007; Henschen & Fry, 1984; Lederman, 2003; Maloney & McCormick, 1993; Messner & Groisser, 1982; Purdy, Eitzen & Hufnagel, 1982; Shapiro, 1984). The character and organization of intercollegiate sport participation is, or at least has been, markedly different in the two countries. “Big-time” U.S. college sports such as football and basketball (often revenue-producing programs with large live and television spectatorship) have not, to date, had comparable counterparts in Canada.

In the U.S.***,*** the effects of “big-time” college sports on the academic mission are controversial and often thought not to be benign. The topic generates intense debate, particularly at the National Collegiate Athletic Association (NCAA) Division 1 level (Carodine, Almond, & Gratto, 2002; Fountain and Finley, 2011; Gaston-Gayles, 2004; Maloney & McCormick, 1993). Studies of “big time” sport programs have generally shown negative effects on various measures of academic attainment (Henschen & Fry, 1984; Maloney & McCormick, 1993; Messener & Grossier, 1982; Purdy, Eitzen, & Hufnagel, 1982 and, Shapiro, 1984). The results of other studies at the intercollegiate level have been markedly inconsistent. Some have shown positive sport participation-academic attainment relationships, some negative and some neutral. For the Canadian case, two previous studies showed negative effects for the 1980s but mostly neutral effects for the 1990s – perhaps attributable to a general shift toward a “credential society” in which according to Curtis and McTeer (1999), an undergraduate degree has suddenly become only a stepping stone to post-graduate training. An undergraduate degree has had progressively declining cachet in the 1990s and the 2000s compared to earlier decadeswhen it was a passport to a professional career (O’Leary & Sloane, 2005)

**The American Case**

Early sport participation-academic attainment research in the U.S. dates back over a century. The results have generally been inconsistent (see Davis & Cooper’s (1934) studyfor an early research review). Almost fifty years later, Purdy, Eitzen and Hufnagel’s (1982) seminal study found that athletes at a Division I university underperformed over a ten-year period when compared to a matched sample of non-athletes. Their points of comparison were educational attainment (grade point average) and graduation rates. They also reported that athletes tended to start their university studies with inferior academic backgrounds, and were less likely to graduate than their non-athlete counterparts. Moreover, within the athlete group, those on scholarship underperformed academically compared to non-scholarship and partial-scholarship athletes. Football and basketball players, in particular, stood out as low academic achievers. This pattern was repeated again some years later in Maloney and McCormick’s (1993) study of the academic performance of athletes and non-athletes over a five-year period at an Atlantic Coast Conference (ACC) university. After controls for background factors (amount of time spent in competition, ease of course, popularity of course, semester of course, overall course load per student, academic major, year in school, number of courses previously taken, GPA at beginning of course, high school at entrance, size of high school graduating class), the results showed that athletes in so-called “revenue sports” received lower grades than other sport athletes (during the competitive season) and non-athletes.

The NCAA has made a concerted effort to defend the academic performance of student-athletes by releasing data on graduation rates annually (NCAA, 2011). However, as Fountain and Finley (2011) point out, the NCAA tends to selectively highlight graduation rates because athletes, as a group, graduate at a higher rate than undergraduate students in general. However, when graduation rates at Division I schools have been analyzed separately by gender, race, and type of sport, differences in graduation rates across certain groups became markedly apparent. Fountain and Finley (2011), for example, report that during the mid-2000s fewer than half of Division I male basketball players graduated (46%). African-American male basketball players had an even lower graduation rate (42%). Similar patterns obtained for football players. Meanwhile, the graduation rate of Division I female athletes was 15% higher than that of all Division I male athletes (71% to 56%).

Another symptom of the sport participation-academic attainment relationship is referred to as academic clustering**,** which is said to occur when multiple athletes from one team have the same academic major for the purpose of accommodating their academic needs and facilitating their availability for practices and games. While the academic major associated with clustered programs varies from campus to campus, they are considered safe havens for players at many schools. While academic clustering is not a new phenomenon, it has likely been exacerbated by the introduction of NCAA regulations governing academic standards (McCormick, 2008). Pressure to maintain athlete eligibility has created an environment in which athletes are funneled into 'athlete-friendly' majors and classes. It has also been argued that because student-athletes often enter universities with below average grade point averages**,** they are admitted into general programs, and not into specific programs they might otherwise choose (Lederman, 2003; Busch, 2007). In short, they have to settle for less challenging programs.

While the evidence for academic clustering has largely emanated from journalism and anecdotes, a few studies have addressed this research question. Case, Greer and Brown (1987) identified a distinct clustering effect among collegiate Division I basketball programs. Clustering was more prevalent among males than females and among black athletes than white athletes. It was also more present in “big time” and academically elite schools. Another study examined differences between white and ethnic minority players at 11 universities in the Atlantic Coast Conference (ACC) (Fountain & Finley, 2009). They found that minority players were clustered in specific academic programs more often than their white counterparts. At six of the schools in the conference, 75% or more of the minority players were clustered in just two academic programs. More recently a study by Schneider, Ross and Fisher (2010) confirmed clustering patterns in the Big 12 Football Conference. Seven of the twelve institutions showed signs of clustering in 2006. The majors in which football players were registered were not as popular among the general student body.

**The Canadian Case**

Differences between the American and the Canadian varsity athlete experience remain marked. Notably, while subject to ongoing debate in Canadian intercollegiate circles, full-ride athletic scholarships are not offered in the Canadian Intercollegiate Sport (CIS) system as of 2013. Having said that, some recent changes in the nature of Canadian intercollegiate sport gave us pause to consider whether previously reported patterns of clustering and academic attainment would hold for the 2000s. Our sense was that the importance placed on sport at many U.S. colleges that might make excessive demands of student-athlete’s time and energy might now be said to be approximated at some Canadian schools. For example, in Quebec, private investors who financially underwrite the program at a level far exceeding that of other Canadian programs own the highly successful Laval University football team. More broadly, athletics departments in many Canadian universities, while commanding little attention from university administrators, particularly during a time of budget entrenchment, have now added staff in the areas of media relations, athlete recruitment, alumni relations, strength and conditioning, financial sponsorship, athlete retention (i.e., monitoring and counseling athletes academically), and the involvement of student-athletes in community outreach activities (e.g. *Mac Athletes Care* program at McMaster University). Creating state-of-the-art websites, incorporating social media and building relationships with local and national media outlets have now become *de rigueur* at Canadian universities. University administrators have become under increasing pressure to leverage “flagship” sports in Canadian intercollegiate sport (football, hockey, basketball and volleyball for men, and basketball and volleyball for women) with a view to seek revenue-generating opportunities (Writes, 2009). Until recently, the British values of amateur sport, fair play and “character development” were more visibly ascendant (Kidd, 1996). In short, coaches with respectable win/loss records and well-behaved athletes had secure jobs.

In 2006, Canadian universities were allowed, for the first time, to offer athletic scholarships. These scholarships were limited to the value of annual tuition fees across Canada save for Ontario where they were capped at $3500. Since then, vigorous debate on scholarships has been ongoing among athletic directors across the country with some arguing for the adoption of the U.S. style scholarship system. Associated with that strand of thinking have been proposals that a “super league” be created by a limited number of traditionally athletically dominant Canadian universities. These proposals are motivated very much by financial considerations with television contracts and commercial sponsorship in mind (Sager, 2012).

Given these recent changes we wondered whether the adoption of more Americanized values has affected the academic performance of Canadian intercollegiate athletes. Hitherto, these effects have not been assessed for the current period for the Canadian system. The current study examines two aspects of potential change: the clustering of athletes in particular academic programs; and the academic performance of athletes in different sports. The current study will report on a wide range of male and female sports. The data for this study are for the years 1998 through 2005, which allowed for a period of six years, until 2011, for degree completion from the first year of entry for the subjects who began university in 2005. Significant changes have occurred within intercollegiate sport since 2005, most notably the introduction of athletic scholarships, albeit only awarded to the maximum amount of $4000 per year as of 2013. The findings from this study will establish an important benchmark for potential future studies, which might assess the influence of athletic scholarships on the intercollegiate sport landscape in Canada.

**Methods**

**Study Participants**

The data for this study were from student records at University A for the years 1998-2005. Data were collected from the intercollegiate sports of women's soccer, rugby, basketball, volleyball, cross country running, field lacrosse, ice hockey, swimming and figure skating and men's soccer, rugby, basketball, volleyball, cross country running, ice hockey, swimming and football. Only athletes who were members of a team for at least three years while they were attending the university were included in the study. This requirement ensured that the participants in the sample had a long term commitment and involvement with the respective team. The academic attainment information was provided by the Registrar’s Office for each of the student athletes who met the previous criteria. The data were provided in the aggregate. The Registrar’s Office identified student athletes on the computerized record system as it simplified the process of regular academic eligibility checks by the intercollegiate athletic coordinator in the Department of Recreation and Athletics. This process made the data access and analysis much simpler but the absence of the specific student athlete and non-athlete records eliminated the possibility of some statistical comparisons, most notably on the measure of academic performance, as indicated by grade point average. The above selection criteria resulted in a sample of 451 student athletes (278 males and 137 females). Similar data for a matched sample of non-athletes with the same proportion of subjects by sex, year of first enrolment and academic program of first enrolment was provided by the Registrar's Office. Individuals in the non-athlete sample were required to have attended the institution for a period of at least three years.

The Registrar's Office also provided the following information**,** in the aggregate, for the student athletes and non-athletes in the sample: year of first fulltime registration, faculty of first registration, academic status (honours or general program) at first registration, graduation status, degree received (honours or general), grade point average (overall and in the major subject on a 12-point scale), number of years required to complete the degree and the high school graduation average which was used for admission to the university. The 12-point scale assigned a value between 1 and 12 based on a student’s performance in a course with 3 points in each grade range (A+ =12; A = 11; A- =10; and continuing down to D- = 1 and a failure gets 0 points). Students were enrolled in either honours or general programs at first admission and remained as students in good standing in an honours program if they obtained a minimum of a 7 grade point average (B-) on courses required for the major area of study and a 5 (C) in other courses. During the period of this study (1998-2005), for the university population, 64.6% of the degrees awarded to males and 65.4% of degrees to females were honours degrees. Regarding the faculty of first enrollment, the Faculty of Arts and Science split in the 2000-2001 academic year to become the Faculty of Arts and the Faculty of Science. Our sample included students who started university between 1998 and 2005, consequently there were some students listed in the Faculty of Arts and Science and others who are listed in the Faculty of Arts or the Faculty of Science. Other participants in the study were from the Faculty of Music or the School of Business and Economics (SBE).

**Research Procedures**

Comparisons were made between: athletes who were members of the flagship sports teams (characterized by full-time coaching) which included football, basketball, volleyball, ice hockey and soccer for males and soccer, basketball, volleyball and ice hockey for females; members of other sports (rugby, swimming and cross-country for males and figure skating, field lacrosse, rugby and swimming for females); and the non-athletes. A chi square procedure tested for statistical significance across these three groups and between the two groups of athletes and the non-athletes.

**Results**

**Clustering**

Table 1 shows the distribution for the athletes (flagship and other) and for non-athletes according to their initial faculty and type of program in which they first enrolled (honours vs. general). Male athletes were clustered at first registration in the Faculty of Arts (42.5 percent of them compared to 24.4 percent of other athletes and 33.7 percent of non-athletes). There was a much lower proportion in the School of Business and Economics (SBE) (26.1 percent compared to 37.4 percent of other athletes and 41.4 percent of non-athletes). Male athletes who were not in the flagship sports were clustered in SBE (37.4 percent) and the Science Faculty (26.4 percent). Only 15.9 percent of non-athletes were enrolled in Science. The above differences were statistically significant at p<.001. At first registration the male flagship athletes were much less likely to enroll in a more demanding honours program (73.6 percent) than the other athletes and the non-athletes (90.1 percent and 85.9 percent respectively). These differences were statistically significant at p<.0001. The differences between the flagship sport athletes and other athletes were statistically significant at p<.01 and the flagship athletes and non-athletes were statistically significant at p<.001. Again the differences between the other sport athletes and the non-athletes were not significant.

The overall pattern for male students was that there were clustering patterns for both flagship and other athletes – but with marked differences in academic orientations. The flagship athletes, whose time commitment to their sport is typically higher, were overrepresented in the Arts. The other athletes, who likely adhere more to the traditional scholar-athlete model, were more heavily represented in the Business and the Science Faculties (37.4 percent and 26.4 percent respectively). Non-athletes were most often

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| Table 1  Comparison of Faculty of Study and Type of Degree Earned by Type of Athlete and Non-Athlete at a Canadian University | | | | | | | |
|  |  | **Flagship Sport Athletes** |  | **Other Athletes** |  | **Non-Athletes** |  |
| **MALES** | **(n)** | **Percent** | **(n)** | **Percent** | **(n)** | **Percent** | **Stat. Sig.** |
| **Faculty First Enrolled** |  |  |  |  |  |  |  |
| **Arts** | (96) | 42.5 | (22) | 24.4 | (108) | 33.7 |  |
| **Arts and Sci** | (31) | 13.7 | (11) | 12.1 | (29) | 9.0 |  |
| **Business** | (59) | 26.1 | (47) | 37.4 | (133) | 41.4 |  |
| **Science** | (40) | 17.7 | (24) | 26.4 | (51) | 15.9 | p<.001 |
| **Progr. First Enrolled** |  |  |  |  |  |  |  |
| **Honours** | (166) | 73.6 | (82) | 90.1 | (276) | 85.9 |  |
| **General** | (60) | 26.4 | (9) | 9.9 | (45) | 14.1 | p<.0001 |
|  |  |  |  |  |  |  |  |
| **FEMALES** |  |  |  |  |  |  |  |
| **Faculty First Enrolled** |  |  |  |  |  |  |  |
| **Arts** | (19) | 19.2 | (33) | 26.6 | (119) | 47.8 |  |
| **Arts and Sci** | (16) | 16.2 | (18) | 14.5 | (34) | 13.7 |  |
| **Business** | (16) | 16.2 | (29) | 23.4 | (52) | 20.9 |  |
| **Science** | (48) | 48.5 | (44) | 35.5 | (44) | 17.7 | p<.0001 |
| **Progr. First Enrolled** |  |  |  |  |  |  |  |
| **Honours** | (90) | 90.9 | (116) | 93.6 | (209) | 84.2 |  |
| **General** | (10) | 9.1 | (8) | 6.4 | (40) | 15.8 | p<.05 |
|  |  |  |  |  |  |  |  |

found in Business (41.4 percent) and the Arts (33.7 percent).

The pattern of findings for female students was strikingly different to that found for their male counterparts. Both the flagship sport athletes and the other sport athletes were highly concentrated in the Science Faculty (48.5 percent and 35.5 percent of them compared to 17.7 percent of non-athletes; differences statistically significant at p<.0001). The differences between the two athlete groups and the non-athletes were statistically significant (flagship sport athletes vs. non-athletes p<.001; other sport athletes vs. non-

athletes p<.001; there were no statistically significant differences between the two groups of athletes). It should be noted, however, that subsequent to the 2000-2001 academic year the Kinesiology and Physical Education Department was located in the Science Faculty and a high proportion of female athletes were enrolled in that program. The flagship athletes who were not registered in Science were relatively evenly distributed between the Arts Faculty (19.2 percent), the Arts and Science Faculty (16.2 percent) and SBE (16.2 percent). The other athletes not in Science opted more for SBE and Arts (23.4 percent and 26.6 percent respectively). Almost half of the non-athlete females (47.8 percent) were enrolled in Arts programs, approximately twice as many as athletes. Both groups of female first year athletes enrolled more often in Honours program than did non-athletes (90.9 percent of flagship sport athletes and 93.6 percent of other athletes compared to 84.2 percent of non-athletes; p<.05). Within the three groups on this measure the only statistically significant difference was between other sport athletes and non-athletes (p<.05).

Table 2 reports on the academic achievement, for males and females, of flagship athletes, other athletes, and non-athletes. Among males, the other athletes were much more likely to graduate with honours than flagship athletes and non-athletes (70.3 percent vs. 54.9 percent and 61.0 percent; p<.001). The differences between these groups all reached statistical significance (flagship sport athlete vs. other sport athlete, p<.05; flagship sport athlete vs. non-athlete, p<.01; other sport athlete vs. non-athlete, p<.01). The male other-sport athletes had the highest grade point averages (7.62), followed by the non-athletes (7.27) and then the flagship sport team members (6.76). Turning to whether they graduated at all, the flagship athletes were more likely to graduate (88.5 percent) than non-athletes (82.1 percent) but less likely than other-athletes (95.6 percent). These differences were statistically significant at p<.01. The statistically significant differences between the groups were: for flagship sport athletes and non-athletes (p<. 01); other-sport athletes and non-athletes (p<.01). Fully 13.5 percent more of the other-athletes graduated than non-athletes. Thus the flagship athletes, whose commitment to their sport was likely to be relatively intense, were the lowest achieving of the three group in terms of graduating with honours and grade point average, but did enjoy success in terms of getting their degree in the end. In other words, a higher proportion of students who participated in varsity sport completed their studies than non-athletes.

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| Table 2  Comparison of Degree Awarded (or Not Awarded), and GPA by Type of Athlete and Non-Athlete at a Canadian University | | | | | | | |
|  |  | **Flagship**  **Sport Athlete** |  | **Other Athlete** |  | **Non- Athlete** |  |
|  | **(n)** | **Percent** | **(n)** | **Percent** | **(n)** | **Percent** | **Stat. Sig.** |
| **Males** |  |  |  |  |  |  |  |
| **Degree** |  |  |  |  |  |  |  |
| **Honours** | (124) | 54.9 | (64) | 70.3 | (196) | 61.0 |  |
| **General** | (76) | 33.6 | (23) | 25.3 | (68) | 21.1 |  |
| **Did Not Grad.** | (26) | 11.5 | (4) | 4.4 | (57) | 17.8 | p<.001 |
|  |  |  |  |  |  |  |  |
| **Grade Point Average** | (226) | 6.76 | (91) | 7.62 | (321) | 7.27 |  |
|  |  |  |  |  |  |  |  |
| **Females** |  |  |  |  |  |  |  |
| **Degree** |  |  |  |  |  |  |  |
| **Honours** | (75) | 75.8 | (103) | 83.1 | (151) | 60.6 |  |
| **General** | (23) | 23.2 | (18) | 14.5 | (79) | 31.7 |  |
| **Did Not Grad.** | (1) | 1.0 | (3) | 2.4 | (19) | 7.6 | p<.0001 |
|  |  |  |  |  |  |  |  |
| **Grade Point Average** | (99) | 7.98 | (124) | 8.10 | (349) | 7.67 |  |
|  |  |  |  |  |  |  |  |

Among females, both groups of athletes were more successful academically than non-athletes on each measure. In terms of type of degree received, both flagship athletes and other athletes received honours degrees more often than non-athletes (75.8 percent and 83.1 percent vs. 60.6 percent, p<.0001). In the comparison between groups the flagship sport athletes and the non-athlete differences were statistically significant at p<. 01. The other sport athletes and non-athletes differences were statistically significant at p<.001. Athletes were also more successful in pursuing their studies to graduation. Ninety nine (99) percent of flagship athletes ended up graduating, the highest proportion of the three groups, followed by the other athletes (97.6) and non-athletes (92.3 percent). These differences were statistically significant at p<.05. The differences between each of the athlete groups and the non-athletes were statistically significant at p<.05.

There were striking differences between male athletes and female athletes. Male flagship athletes graduated at a rate 10.5 percent lower than female flagship athletes, but the gap between male non-athletes and female non-athletes was of a similar magnitude. Given this similarity in disparity across gender the graduation rate of male other athletes (95.6 percent) were markedly high because it was only slightly lower than that for female other athletes (96.6 percent). It was also noteworthy that the women’s non-athlete GPA of 7.67, though lower than any female athletes, was still higher than that for any of the men’s groups.

In general, we can see that, for each measure, male athletes who participated in the other sports outperformed both flagship athletes and non-athletes on all measures. A higher proportion of them graduated, more of them completed honours programs, and they completed their studies with higher grades. Flagship athletes underperformed compared to their non-athlete counterparts, but only on two of the three measures – proportion with honours standing and grade point average. However, 6.3 percent more of the flagship athletes completed their degree compared to non-athletes. Female athletes in the other sports outperformed flagship athletes and non-athletes on all measures but one (percent who graduated). Non-athletes were less likely to graduate with honours, less likely to graduate at all, and had a lower grade point average than female athletes in general.

Table 3 presents similar findings to the above but reports them separately for each of the flagship sports. The differences reported were not generally statistically significant because of the low numbers of cases for the specific sports. On entry to university, fewer athletes in each of the male flagship sports enrolled in honours programs compared to non-athletes (85 percent). Male hockey players were the least likely (53.1 percent) to begin as honours students. By the time they finished their studies, though, more basketball players (76.5 percent) and soccer players (69.7 percent) graduated with honours than non-athletes (61.0 percent). Football players (45.7 percent) and hockey players (52.6 percent) were less likely to leave with honours degrees. Proportionately more male athletes (in all four flagship sports) graduated than did non-athletes. Basketball players (100 percent) and football players (88.8 percent) were the most likely to graduate. Except for basketball players, flagship sport athletes finished university with a lower grade point average than non-athletes. In sum, among the males, football players underperformed academically compared to other flagship sport athletes and non-athletes. Although 88.8 percent received their degree only 45.7 percent graduated with honours. Basketball players were the highest achievers in this group. All of them graduated, 76.5 percent of them with honours. Their grade point average was 7.60, highest among flagship sport athletes and higher than non-athletes. More non-athletes failed to graduate than all flagship sport athletes.

For women, markedly more athletes in three of the four flagship sports (only soccer players were slightly lower) entered as honours students compared to non-athletes. The highest academically achieving female athletes, by far, were the volleyball players. All of them entered as honours students and all of them graduated, 90.9 percent with honours. Their GPA was 8.56. Athletes in all of the flagship sports were more likely to graduate with honours, and more likely to graduate at all, than non-athletes. Even hockey players, who were the least successful of the flagship athletes, all graduated and performed better than non-athletes in gaining honours degrees (61.3 percent vs. 60.6 percent). The only measure where some athletes (hockey and basketball) lagged slightly behind non-athletes was grade point average. Soccer (8.20) and volleyball players (8.56) earned higher grade point averages than non-athletes (7.67).

**Discussion**

The results of the present study show a high percent of flagship sport athletes being accounted for within one faculty, Arts for males and Science for females. One explanation for academic clustering has been that players gravitate to majors that allow flexibility in scheduling, allowing more electives, and offering a wide variety of class times (Capriccioso, 2006; Finley & Fountain, 2007). However, if flexibility of scheduling were the driving force behind academic clustering, a large percent of both male and female athletes would select the same faculty, which they did not in our findings. This theory may account for the preponderance of male athletes in the Arts such that they would have fewer responsibilities for attending labs. The better interpretation for the female athletes is that many of them were students in the Kinesiology and Physical Education Department, which was located in the Faculty of Science. It remains an open question as to why more female varsity athletes studied Kinesiology than male athletes. The Kinesiology and Physical Education Department has a higher admission requirement than all other academic programs except Business and females comprise approximately 65% to 70% of the overall enrolment in the Kinesiology and Physical Education Department.

The scope of this study did not extend to determining how players selected their majors. The American literature has identified scheduling, advising, and pressure from coaches as potential intervening factors (Capriccioso, 2006; Finley & Fountain, 2007; Finley, Finley & Fountain, 2008). Some administrators have observed that “student-athletes will choose the path of least resistance - less competitive majors - so they can maintain their eligibility" (Lederman, 2003). It has been suggested that academic advisors in the U.S. advise athletes on course selection to help them optimize their chances of maintaining eligibility (Busch, 2007). One study even identified a correlation between the percentage of football players in a particular major and the strength of the football program (Schneider, Ross & Fisher, 2010). Analogously, in Canada, a recent development in university athletic departments is the hiring of academic counsellors whose job it is to maintain the eligibility of student-athletes.

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| Table 3  *Measures of Academic Attainment by Male and Female Intercollegiate Athletes by Sport and for a Random Sample of Non-Athletes at a Canadian University* | | | | | | | | | | |
|  | Men’s  Football | Men’s  Hockey | Women’s Hockey | Men’s  Basketball | Women’s  Basketball | Men’s  Soccer | Women’s  Soccer | Women’s  Volleyball | Male Non-  Athletes | Female  Non-Athletes |
|  | (n= 116) | (n=38) | (n=31) | (n=17 ) | (n=17) | (n=33 ) | (n=29) | (n=22) | (n=321) | (n=249) |
| **Honours on Entry** | 75.2 | 53.1 | 90.3 | 76.5 | 94.1 | 81.3 | 82.8 | 100 | 85.0 | 84.2 |
| **Degree Earned** |  | | | | | | | | | |
| **Honours** | 45.7 | 52.6 | 61.3 | 76.5 | 64.7 | 69.7 | 86.2 | 90.9 | 61.0 | 60.6 |
| **General** | 43.1 | 34.2 | 38.7 | 23.5 | 35.3 | 15.2 | 10.3 | 9.1 | 21.2 | 31.7 |
| **Did Not Grad.** | 11.2 | 13.2 | --- | --- | --- | 15.2 | 3.4 | --- | 17.8 | 7.6 |
|  |  | | | | | | | | | |
| **GPA** | 6.41 | 6.43 | 7.59 | 7.60 | 7.57 | 7.14 | 8.20 | 8.56 | 7.27 | 7.67 |
|  |  |  |  |  |  |  |  |  |  |  |

Their purview extends to monitoring the academic performance of student athletes, organizing study halls, and advising students on course load. From this development it is hard to avoid the conclusion that the relationship between sport involvement and academic attainment is shifting toward an American-style model in Canada with clustering as the outcome. This notion has yet to be tested in research and it is yet to be determined whether Canadian varsity athletes are steered into majors that are considered more athlete-friendly.

Other interpretations are also plausible. It might be that multiple athletes enrolled in the same major on the advice of their peers or older athletes who emphasized the importance of schedule flexibility and the opportunity for group study for upcoming tests or exams (Jordan & Denson, 1990). Majors that permitted greater leeway in course selection and offer multiple course sections were better suited to athletes who needed to coordinate their academic and athletic schedules. Some majors offered more flexibility than others. This may suggest that clustering was a legitimate and naturally occurring phenomenon resulting from student-athletes selecting programs such as sport management, which aligned with their personal interests.

Another practice common in American universities that has parallels in Canada is the extending of academic accommodation to high school students with outstanding athletic backgrounds. The practice can also facilitate clustering. When student-athletes are admitted into universities with lower grade point averages than other students it is safe to assume that some of them lag behind the non-athlete applicants in academic preparation. Their lower grades may compromise their academic choices at first registration resulting in their being admitted into general rather than honours programs. They may also be only accepted into, and have to settle for, programs they otherwise would not select.

Turning to academic attainment, male flagship athletes did not perform as well as non-athletes in academic attainment when measured by the proportion in honours programs and grade point average. They were, however, much more likely to finish their degree. A novel finding in this study was that the rest of the male varsity athletes fared much better academically than both flagship athletes and non-athletes. This is a pattern not seen in the previous literature, whether Canadian or American.

There was an even more marked trend in the female population where both types of athlete were higher in academic attainment than non-athletes. Non-flagship athletes were superior academically on all three measures of attainment. When compared by gender, female athletes were much better students than male athletes and all non-athletes. While gender differences in academic attainment were inconsequential for non-athletes, they were marked between female athletes and male athletes. These gender differences are consistent with earlier findings for the 1980s and the 1990s (Curtis & McTeer, 1999) as well as other Canadian findings reported by Danylchuk (1995).

Our findings are somewhat consistent with those reported for the 1970s and 1980s (Curtis & McTeer, 1990), which showed athletes doing at least as well in school as non-athletes. They are not consistent with the findings of a follow-up study for the 1990s where athletes did not perform academically as well as non-athletes (Curtis & McTeer, 1999). The present findings do show, however, that both males and female athletes, particularly those in the less intense sport programs, have made gains in their academic attainment over time relative to non-athletes. Suffice it to say that for the contemporary era non-athletes have not, in general, have an academic advantage over athletes. Indeed, it is clear that in the 2000s playing non-flagship sports was clearly a positive for both male and female students. These patterns are very different to those reported in previous Canadian studies. Both Martens (1985) and Danylchuk (1995) studies yielded negative results showing negative effects on academic attainment from participating in varsity sport.

What are the explanations for the current findings that flagship sports were debilitative to academic success among male athletes while the other athletes outperformed all of their contemporaries? One possible reason for underperformance is that male athletes who play sports like football, basketball and hockey endured longer seasons, more arduous training programs and extensive travel. Without appropriate data we cannot test these assertions, an issue that is complicated by the possibility that the equivalent female programs might well have been equally demanding.

Another interpretation, alluded to above, is that the dynamics around flagship sports intensified over recent decades, more closely coming to resemble their American counterparts. The advent of high performance training and assessment procedures, and the growing availability of more sophisticated nutrition, strength, power, endurance and flexibility programs transformed the flagship sports to 12-month operations. These sports demanded more time and commitment of student-athletes than they once had (Miller & Kerr, 2003). To our knowledge, there has been no research on these topics to date. One talisman of a ramping up of intensity over time has been the advent of athletic scholarships at Canadian universities and growing pressure from some quarters to make them more extensive. This movement is particularly entrenched in Western Canada where there is more expressed concern about the need to prevent talented Canadian athletes from being tempted to go to American universities where their education would be paid for and sport is higher profile (Gillespie, 2013).

Why did the other athletes outperform all of the other students? The overarching trend over time toward credentialism was likely a factor. Student-athletes have likely become increasingly conscious in recent years that simply graduating is no longer a passport to a secure career. An undergraduate degree now carries less weight in the employment market than it did once. High grades have become more important as students have become aware that jobs requiring undergraduate degrees only have become increasingly scarce in recent decades. Students graduating with better grades were better positioned to secure jobs or to be admitted to post-graduate education. Students in the previous decades would not have been under the same type of academic pressure. Contemporary students are more likely to strive to be in honours programs and to apply themselves to their studies. We note, for example, that compared to athletes from the 1980s and 1990s (Curtis & McTeer, 1999), considerably more student-athletes in the 2000s attempted honours degrees on entry and successfully finished with honours degrees.

There are other plausible interpretations of the positive findings, all of which are yet to be empirically tested. Athletes may have derived intellectual and energy benefits from their high level of physical activity. Their physical conditioning likely had spin-off benefits for their mental and intellectual productivity and academic outcomes as seen in research among children and youth (see Shepard, 1997; Trudeau and Shepard, 2008). Of course, pointed studies need to be conducted to test this assertion with Canadian varsity athletes.

It might also be that universities had become more focused on providing academic support to student-athletes. For example, at McMaster University, the Bastable Resource Centre opened its doors in 2008 to provide student-athletes with a quiet place to study in between classes and practices. To complement the study space, the Resource Centre offers a variety of services, including workshops, academic mentors and faculty specific group study.

Overall, our results for males suggest the finding of negative effects for flagship athletes and positive effects for other athletes. Flagship athletes perhaps succumbed to the pressures that came with the ratcheting up of pressure to win and the attendant time commitment that demanded. Positive effects for other male athletes and for female athletes in general may have been indicative of the influence of the scholar first – athlete second culture that has traditionally underscored Canadian intercollegiate sport culture (Matthews, 1974).

How do we move forward in better understanding these processes? One approach would be to implement studies that monitor the lived realities of samples of athletes and non-athletes. Time-budget studies would yield relevant data on how students allocate their time between academic and extracurricular activities. Expectations that athletes are more time pressed than non-athletes could be tested with these data – and possibly yield counterintuitive findings. As Curtis & McTeer (1990) have suggested, while time demands on student-athletes might indeed be great they might also devote less time to part-time work and other, alternative, forms of leisure activity.

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