

## *Journal of Issues in* **Intercollegiate Athletics**

### Factors Contributing To Student-Athlete Retention

---

**Carrie L. Le Crom**

*Virginia Commonwealth University*

**Beverly J. Warren**

*Virginia Commonwealth University*

**Henry T. Clark**

*Virginia Commonwealth University*

**Joseph Marolla**

*Virginia Commonwealth University*

**Paul Gerber**

*Virginia Commonwealth University*

---

*The purpose of this study was to determine the effect of scholarship support, gender and sport-type (individual or team) on student-athlete retention. Student-athlete retention was defined by utilizing the Academic Progress Rate (APR) instituted by the National Collegiate Athletic Association in February, 2005. A single mid-major Division I Conference provided data (eight institutions) on student-athletes participating from 2001-2005, resulting in 12,980 total observations. Data were analyzed utilizing analysis of variance (ANOVA), discriminant function analysis, and binary logistic regression to determine the extent to which scholarship support, gender and sport type influenced retention. Results indicated scholarship support alone was not significantly related to retention; however, gender and sport type were significant predictors of retention with female and individual sport athletes retained at a higher rate than their male and team sport counterparts. Additionally, the combination of scholarship support, gender and sport type emerged as a significant predictor of retention. These findings indicated certain populations of student-athletes leave institutions at a higher rate than others, and may suggest a need to target retention efforts at particular sub-sets of student-athletes.*

**E**stimates are that by the year 2012 the number of students attending college will have increased to over 17.7 million from 15.3 million in 2003 (College Enrollment, 2003). However, as enrollments increase, there is concern that attrition rates will similarly grow. In an attempt to

deal with this issue, numerous factors have been identified as contributing to student attrition. This area of study is vast and will continue to expand as long as colleges and universities face problems of retention and attrition; however, little information was found on the retention of specific populations of students. Bean and Metzner (1985) suggested the need to conduct research on subgroups of students, rather than generalizing to all students collectively, as the most important decision variables will be different for different subgroups of students. Chang (2005) also noted retention efforts aimed at subgroups can be more effective, as “traditional” measures of student involvement can be inaccurate when it comes to subgroups of students (community college students, ethnically diverse students, etc.; p. 771). Student-athletes (SA) are one of these subgroups that warrant further study on retention. Not only are the decision factors that go into SA choosing which school to attend different from the traditional college student, but once SA arrive on campus they may be faced with a number of different expectations and stressors that can contribute to their overall college experience. “Since intercollegiate athletes not only choose a university, but also a team and coach, their college selection process may be much different than non-athletes” (Letawsky, Schneider, Pedersen & Palmer, 2003, ¶6). For instance, unlike the typical high school senior who narrows down his or her college options based on such factors as location, institution type, admissions requirements and financial aid, a highly recruited SA has to additionally consider factors such as scholarship status, the strength of the athletic program, expected playing time, coaching styles and personalities, as well as the cohesion of the team. Letawsky, et al. noted the most important decision factors for SA, as opposed to non-student-athletes, are degree-program options, head coach, academic support services, type of community in which the campus is located, and the school’s sports traditions. Other research has shown receiving an athletic scholarship to be the most important decision factor in a SA’s choice of schools (Reynaud, 1998). Once deciding and arriving as a freshman, SA must make time for classes, practices, an often heavy traveling schedule, and the pressures of performing both in the classroom and on the field. In following a men’s basketball team from freshman year through graduation, Adler and Adler (1985) noted that initial optimism about succeeding academically and athletically eroded into a sense of detachment from academics based on three factors: the athletes felt overwhelmed by the demands of athletics, they found themselves socially isolated from non-student-athletes, and there was too great a gap between their academic abilities and the university’s expectations. The time demands of balancing athletics and academics in college have also been cited as a major reason for dropout from both sport and school (Perrelli, 2004). With the dissimilar college experience a SA may face in relation to the traditional student, it stands to reason he or she would have different or additional factors affecting retention. Therefore, it may be important to consider this population separately from the entire student body when investigating retention and attrition issues.

Of the nearly 375,000 SA participating in National Collegiate Athletic Association (NCAA) programs in 2007, data are available of graduation rates, although these may not accurately portray retention throughout the college experience. A formula developed by the U.S. Department of Education indicated that 62% of Division I SA in the most recent cohort earned their degrees within the given six year time frame. The NCAA, however, contends this formula fails to account for transfer students, and reports the most recent rate to have been closer to approximately 76% (Wolverton, 2006).

Graduation rates do not, however, measure retention on a year-to-year basis, nor are they able to show factors affecting a SA’s decision to stay or leave a particular institution. Additionally, academic reform has received heightened attention in Division I athletic programs

in recent years. A comprehensive three-year effort was initiated in 2002 by NCAA President, Myles Brand, and focused on changing institutional behavior relative to academic support and guidance to SA, strengthening the academic success of SA, and improving academic progress, retention, and graduation rates (Brown, 2005, March 14; Christianson, 2004). The culmination of this review was the enactment of two assessment tools to measure academic success. One was the NCAA Graduation Success Rate (GSR), a management tool that captures the graduation rate of SA, including those who transfer from one institution to another and graduate. The second measure enacted was the Academic Progress Rate (APR), described as a “real-time” assessment of academic performance that awards points for academic eligibility and retention (including graduation) on a term-by-term basis for each sport. The APR is calculated by allocating points for eligibility and retention, the two factors identified as the best indicators of graduation. Each scholarship SA is awarded one point for remaining eligible for competition and one for remaining at the institution. A team’s APR is determined by the total points awarded from an assessment of all scholarship players divided by the total points possible for a team. Although the APR was enacted as a more accurate measurement tool of progress toward degree completion than the previous graduation rates, there are still issues with this recent initiative. After its enactment, changes have already been made to the APR measure, the first coming in the form of forgiving the APR retention point for SA who leave to play sports professionally or for any other reason outside of the control of the SA (Brown, 2005, October 10). Another point of contention is the lack of rationale for the exclusion of non-scholarship SA from the process. The initiation of the APR may have an influence on how scholarships are awarded in the future with many programs perhaps choosing to devote greater funding to fewer SA with the intent of producing an acceptable APR score. At the present time, research is needed on the impact of the level of scholarship funding on the retention of SA. Therefore, one goal of this investigation was to determine the relationship between the level of scholarship funding and the retention rate of SA. Another purpose of this investigation was to explore the effect of scholarship support, gender and sport-type (individual or team sport) on SA retention.

## Method

### *Population and Sampling*

Of the 12 schools within the selected conference, eight agreed to participate in the investigation. Within these institutions, each SA who participated in intercollegiate athletics in any of the years ranging from the 2001-2002 season through the 2004-2005 season was included in the sample. Additionally, every SA was treated as a separate observation each year. Therefore, if a SA participated from 2001-2005, he or she was counted as four separate observations, once each year. Multiple observations were necessary since a SA had the potential to have a different level of scholarship funding and to leave the team for each participating year. In all, there were 12,980 observations included in this investigation.

### *Procedures*

All required data were on file at each individual institution and were collected through working with a designated staff member at each institution. To obtain access to these files,

Downloaded from <http://csri-jiia.org>

consent was requested from the Athletic Director at each institution in the sample. Data were compiled on every SA who participated from the 2001-2002 through the 2004-2005 academic year. Data were obtained on each SA's gender, sport, scholarship funding (both athletic and otherwise), total cost of tuition (to determine scholarship as a percentage of total tuition), and retention status. An athlete was classified as retained if he or she remained at the same institution the following year (regardless of remaining on the team or not), returned to finish his or her degree (if eligibility had expired), or graduated from the institution. Additionally, any SA who left an institution after signing a professional sports contract was excluded from the retention portion of the APR measure. Therefore, when able to determine that a SA signed a contract to play professionally, he or she was also excluded as an observation in this investigation to remain consistent with the APR measure of retention. All other cases were classified as not retained.

## Results

Data were analyzed using analysis of variance (ANOVA), discriminant function analysis, and binary logistic regression. Additionally, post hoc analyses were employed when multiple comparisons revealed significant differences. The significance level in all analyses was set at  $p \leq 0.05$ .

In the total sample (12,890 observations), there were 6,780 male observations (52.2%) and 6,200 female observations (47.8%). Of those, 5,422 participated in individual sports (41.8%) while 7,558 competed in team sports (58.2%). Overall, 12,027 observations were retained (92.7%) and 953 were not retained (7.3%). As expected, the disproportional number of retained SA versus non-retained SA demonstrated a lack of normality in the sample, with a skewness of 3.271. The central limit theorem states as the sample size grows, the sampling distribution approaches a normal distribution (Agresti & Finlay, 1999). Therefore, even given the skewness of the data, the distribution of means remained fairly normal based on the large sample size.

A total of 37.7% of SA in the sample received no scholarship funding, which was the largest group. On the other end of the spectrum, 13.0% of the sample received 100% funding (or more), considered a full scholarship. Many of the SA in this group competed in the revenue producing sports of football and men's and women's basketball where a full scholarship is required by the NCAA. Table 1 depicts scholarship frequencies at levels between 0.0% and 100.0% funding (as a percentage of total tuition).

Additionally, women were retained at a higher rate than men, with 94.0% of women being retained while 91.0% of men were retained. The women were also retained at a rate higher than the average retention rate of the overall sample (92.7%). Those who participated in individual sports were more likely to be retained at the institution (94.0% retention rate) than their team sport counterparts (92.0% retention rate).

The data were analyzed using both a 2 (gender) X 2 (retention status) ANOVA to examine for differences between groups and binary logistic regression to determine relationships. Because the scholarship support variable was the only continuous variable in this analysis, it was used as the dependent variable in the ANOVA. Therefore, the results were exploring differences in level of scholarship funding on retention status and gender. Results indicated no overall effect for retention status. However, a significant main effect was found for gender, in that women received significantly higher levels of funding than men ( $F(1/12,979) = 8.888, p = .003$ ). Although statistically significant, the effect size of this finding, however, was very small (Cohen's  $d = 0.05, r = 0.02$ ), indicating the significant findings may be confounded by the

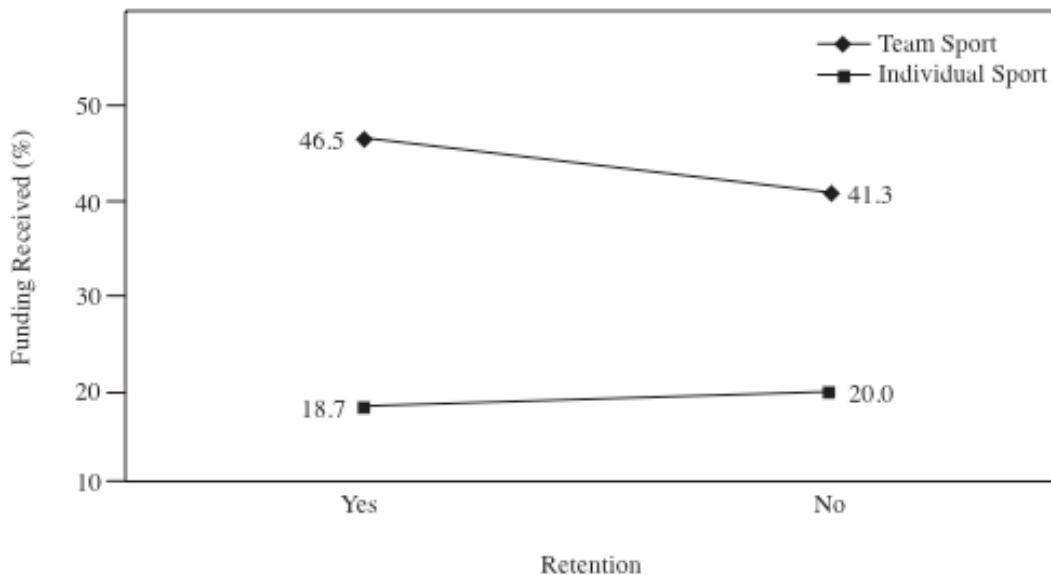
large sample size. Binary logistic regression findings indicated there was a relationship between gender and retention. Gender emerged as a significant predictor of retention.

Table 1 - *Scholarship Frequencies at Different Levels of Funding*

Scholarship level (%)	Frequency (N)	Percent (%)
0	4,894	37.7
1 - 25	1,979	15.2
26 - 50	2,238	17.2
51 - 75	1,354	10.4
76 - 99	820	6.3
100 +	1,695	13.0

In the 2 (sport type) X 2 (retention status) ANOVA, sport type was found to have a significant main effect with level of funding ( $F(1/12,979) = 398.509, p = .000$ ), in that participants on team sports received significantly higher amounts of funding (46.1%) than those who participated in individual sports (18.8%). Additionally, there was an interaction between retention and sport type ( $F(1/12,979) = 7.174, p = 0.007$ ). The interaction, however, accounted for only a small part of the total variation (partial eta squared = 0.001).

Shown graphically (Figure 1), the retention X sport type interaction revealed not only did those who participated in team sports receive more funding in general, but when related to retention, those team sport athletes who were retained had an average funding level of 46.5% while those who left received an average funding of 41.3%. This is opposite for individual sport athletes who left at higher funding levels on average (20.0%) than those who stayed (18.7%). Tukey's post hoc analyses revealed three significant differences emerged, between individual and team sport athletes who were retained, individual and team sport athletes who were not retained, and team sport athletes who were and not retained. In essence, there was a significant difference between individual and team sport athletes, whether retained or not, in regard to funding levels, as team sport athletes receive significantly higher levels of funding than individual sport athletes. Additionally, funding levels of team sport athletes who were retained were significantly higher (46.5%) than those of team sport athletes who were not retained (41.3%). Binary logistic regression further supported that sport type was a significant predictor of retention, and scholarship support additionally emerged as a significant predictor of retention. Because scholarship support was not a significant variable in the equation with gender, the fact it was significant in this equation demonstrates there was an interaction effect between scholarship support and sport type.



*Figure 1: Interaction Effects of Retention and Scholarship Support Across Sport Type*

Finally, all three independent variables and their relation to retention were explored. Binary logistic regression addressed how the independent variables (scholarship support, gender, and sport type) related to and/or predicted the dependent variable, retention. With all of the variables entered into the equation, the Hosmer and Lemeshow goodness of fit test resulted in a significance level of .011, suggesting the overall model does not adequately fit the data. Although in most cases a significance level below 0.05 is a good result, well-fit regression models will result in nonsignificant Hosmer and Lemeshow tests, indicating what the model predicts is not significantly different from the observed values (Garson, 2007). However, Hosmer and Lemeshow tests are greatly affected by large sample sizes. All three of the independent variables emerged as statistically significant predictors of retention (scholarship support, gender and sport type).

Overall, 953 SA in the sample were not retained. Of these, 609 were men and 344 were women, while 338 competed in an individual sport and 615 were team sport athletes. Table 2 indicates how many non-retained observations placed in each gender and sport type category. The majority of SA who were not retained were male athletes who competed in team sports.

Of the non-retained SA, 64% were men and 36% were women. Additionally, 65% were team sport SA while 35% were individual sport SA. Upon further analyses, the chi-square goodness of fit test revealed that there were more men and fewer women who were not retained than would be expected (chi-square = 51.058,  $df = 1$ ). A similar finding was revealed through a chi-square goodness of fit test on sport type. The results indicated there were more team sport and fewer individual sport athletes not retained than would be expected. The resulting chi-square was large, at 15.586.

Table 2 - *Number of Non-Retained Student-Athletes by Gender and Sport Type*

	Team Sport (N)	Individual Sport (N)
Male	380	229
Female	235	109

A summary of the overall findings indicated; a) scholarship support alone was not significantly related to retention; b) gender was a significant predictor of retention with female SA having higher rates of retention than their male counterparts; c) sport type was a significant predictor of retention with individual sport SA having higher rates of retention than team sport SA; d) scholarship support, gender, and sport type were all significant predictors of retention.

Gender emerged as a significant predictor of retention (with women retained at a higher rate than men), while scholarship support did not. Although little research was found to directly link gender to retention, some researchers have focused on the differences in retention decisions for men and women. Spady (1971), one of the first researchers to make the gender-retention connection, asserted that different factors influence retention decisions for men versus women. One of Spady's most important findings, and later supported by Bean (1980), was that women's attrition process is much more complex than men's. For instance, dropout decisions for men were largely determined by grade performance, while for women, decisions related to more complex factors, such as institutional commitment, satisfaction and social integration (Spady).

The current investigation did not explore reasons delineating why more women were retained than men. However, one factor, specific to SA, that may help explain the higher retention rates of female over male SA is professional athletic opportunities beyond college. For men, there are many opportunities to play sports professionally after college, whether in the United States or abroad. Although professional leagues do exist for women, there are fewer opportunities for women in this regard. In the 2003-2004 year, 34 of 4,115 male SA were drafted professionally in basketball, 242 of 18,930 were drafted professionally in football, and 523 of 7,580 were drafted professionally in baseball. Numbers were not found for women who signed professional sports contracts in the same year (Brown, 2005, October 10). Additionally, the pay scale is much higher for male professional sports leagues, so women are not able to make as lucrative a salary by playing sports professionally. In 2007, total LPGA prize money was \$50 million compared to the PGA tour's \$256 million; the maximum WNBA salary is \$89,000 while the NBA's is \$15 million (Tideman, 2007). For this reason, women may be more likely to persist as both a student and athlete. Men, however, may leave school early and not be retained as they pursue professional sports careers. Of course, even for men, only a small percentage of those who participate in college athletics play sports professionally. For instance, in the NFL and NBA, two of the largest professional sports leagues in the United States who recruit many players out of college, only 2.3% and 2.5% respectively, of Division I college athletes go on to play in these leagues (Bolig, 1994). In 2003-2004, the numbers were below the averages, with

0.8% of college basketball players drafted, 1.3% of college football players drafted, and 6.9% of college baseball players drafted (Brown, 2005, October 10). However, there are many more students who have the dream of playing professionally, and who may concentrate more on their athletics experiences than academic commitments, possibly leading to retention inequities (either for purposes of leaving to pursue professional opportunities or leaving for lack of academic performance).

The interaction effect found between sport type and retention as related to scholarship funding could suggest that partial funding may minimize the impact of funding on retention, as more team sport athletes in this investigation received full scholarships (20%) than individual sport athletes (3%). Additionally, it may be inferred those who receive less scholarship funding (individual sport athletes) may become more intrinsically motivated than those who receive higher levels of scholarship support (team sport athletes). Ryan's (1977) research alluded to this when he compared intrinsic and extrinsic motivation among collegiate SA, denoting scholarship funding as the extrinsic motivation. Ryan found that, compared to non-scholarship athletes (intrinsically motivated), those on scholarship (extrinsically motivated) enjoyed practice less, enjoyed college athletics in general less, and enjoyed college athletics less than high school athletics. In addition, 75% of the scholarship athletes in his population stated extrinsic motivations for participating, while 71% of the non-scholarship athletes claimed to participate for intrinsic reasons (Ryan). Amorose and Horn (2000, 2001) also studied intrinsic and extrinsic motivation in college SA. In their 2001 study, which was an extension of the former, they utilized very few full scholarship SA, and concluded that intrinsic motivation could be affected by varying levels of scholarship. Therefore, it is recommended that level of scholarship be taken into consideration in future studies (Amorose & Horn, 2001). While intrinsic and extrinsic motivation of SA was not directly studied in this investigation, it may be a contributing factor to individual sport athletes being retained at higher levels than team sport athletes, who receive more scholarship funding.

An additional possible explanation for team sport participants leaving at higher rates than individual sport athletes may be related to the perceived status of the two types of sports. Football and basketball are two premier sports in collegiate athletics. Because these two sports are so visible there is the possibility athletes who participate in these sports feel more pressure. Adler and Adler (1985) studying a premier Division I college men's basketball team, noted that one of the major changes players noticed when moving from high school to college athletics had to do with the professionalization of the sport. Athletes felt the commercialization of the sport also meant heightened media attention, including fame and glamour (Adler & Adler). This athletic pressure often has the potential to distract a student's academic focus, which may lead to retention and eligibility issues. In addition, the sports of football and basketball consistently produce graduation rates below other sports and that of the overall student-body. In a 2004 study of one athletic conference, the average graduation rate of the overall student body at all schools combined was 76.8%. For football SA at the same schools, the graduate rate was 64.8% and for basketball SA it was 40.1% (Hoops, 2004). Although it may be difficult to determine how much of the non-retention in this investigation was due to academic dropout, the connection to men's basketball and football in the team-sports category may contribute to the difference in retention between individual and team-sport athletes.

The results of this investigation have several practical implications for athletic departments and the NCAA. Many athletic departments are currently focusing on retention programs, especially since the implementation of APR. Based on the results of this investigation,



although a retention program may help many SA, there should be specific types of programs that focus differently on male athletes and team sport participants, as these are the SA who appear more likely to leave. Programs may include peer mentoring initiatives, assigning more senior level advisors to the athletes who are at greater risk of non-retention, or accommodating more frequent study hall and tutoring sessions.

The findings from this investigation might be useful to the NCAA because the APR only takes into account SA who receive athletic scholarships. Since the APR excludes non-scholarship SA, it may be useful to compare the NCAA interpretation of retention to the retention rates of this investigation, which included all SA.

The APR is still evolving, as changes have been made since its inception. However, any effort by the NCAA to increase SA progress toward graduation is well founded. The results of this study may offer further insight into factors that may have an impact on future APR scores.

## References

- Adler, P., & Adler, P. A. (1985). From idealism to pragmatic detachment: The academic performance of college athletes. In D. S. Eitzen (Ed.), *Sport in contemporary society: An anthology* (6<sup>th</sup> ed.) (pp. 219-235). New York: Worth Publishers.
- Agresti, A. & Finlay, B. (1999). *Statistical Methods for the Social Sciences*. Upper Saddle River: Prentice Hall, Inc.
- Amorose, A. J. & Horn, T. S. (2001). Pre- to post-season changes in the intrinsic motivation of first year college athletes: Relationships with coaching behavior and scholarship status. *Journal of Applied Sport Psychology, 13*, 355-373.
- Amorose, A. J., & Horn, T. S. (2000). Intrinsic motivation: Relationships with collegiate athletes' gender, scholarship status, and perceptions of their coaches' behavior. *Journal of Sport & Exercise Psychology, 22*, 63-84.
- Bean, J. P. (1980). Dropouts and turnover: The synthesis and test of a causal model of student attrition. *Research in Higher Education, 12*, 155-187.
- Bean, J. P. & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research, 55*, 485-539.
- Bolig, L. E. (Ed). (1994). *A career in professional athletics: A guide for making the transition*. Overland Park, KS: NCAA Publishing.
- Brown, G. (2005, March 14). APR signals need for change within Division I programs. *National Collegiate Athletic Association*. Retrieved June 21, 2005, from [http://www2.ncaa.org/%20media\\_and\\_events/association\\_news/ncaa\\_news\\_online/2005/03\\_14\\_05/front\\_page\\_media\\_and\\_events/association\\_news/ncaa\\_news\\_online/2005/03\\_14\\_05/front\\_page\\_media\\_and\\_events/association\\_news/ncaa\\_news\\_online/2005/03\\_14\\_05/front\\_page](http://www2.ncaa.org/%20media_and_events/association_news/ncaa_news_online/2005/03_14_05/front_page_media_and_events/association_news/ncaa_news_online/2005/03_14_05/front_page_media_and_events/association_news/ncaa_news_online/2005/03_14_05/front_page)
- Brown, G. (2005, October 10). Division I still talking about transfer effect on APR score. *National Collegiate Athletic Association*. Retrieved June 21, 2005, from <http://www.ncaa.org/wps/ncaa?ContentID=16773>
- Chang, J. C. (2005). Faculty-student interaction at the community college: A focus on students of color. *Research in Higher Education, 46* (7), 769-802.
- Christianson, E. (2004, April 29). NCAA board of directors adopts landmark academic reform package. *National Collegiate Athletic Association*. Retrieved June 21, 2005, from <http://www.ncaa.org/wps/ncaa?ContentID=8126>

- College Enrollment at All-Time High. (2003, Oct 1). *Reference Service Press*. Retrieved Jan 20, 2006, from [www.rspfunding.com/articles/article/1436530/14618.htm](http://www.rspfunding.com/articles/article/1436530/14618.htm)
- Garson, G.D. (2007). *Syllabus for PA 765: Quantitative Research in Public Administration: Logistic Regression*. Retrieved March 20, 2007, from <http://www2.chass.ncsu.edu/garson/PA765/logistic.htm>
- Hoops: College Graduation Report Card. (2004). *The Charlotte Observer*. Retrieved Oct 26, 2004, from <http://www.charlotte.com/mld/observer/sports/10015476.htm>
- Letawsky, N. R., Schneider, R. G., Pedersen, P. M., & Palmer, C. J. (2003). Factors influencing the college selection process of student-athletes: are their factors similar to non-athletes? *College Student Journal*, 37 (4), 604-610.
- Perrelli, J. A. (2004). *Factors involved of why student-athletes withdraw from collegiate athletics*. Eugene, Oregon: Kinesiology Publications, University of Oregon.
- Reynaud, B. C. (1998). *Factors influencing prospective female volleyball student-athletes' selection of an NCAA Division I university: toward a more informed recruitment process*. Ann Arbor, Mich.: University Microfilms International.
- Ryan, E. D. (1977). Attribution, intrinsic motivation, and athletics. In Gavialis, L. I. & Knee, M. E. (Eds.), *Proceedings of the NCPEAM/NAPECW National Conference* (pp. 346-353). Chicago: University of Illinois at Chicago Circle Office of Publication Services.
- Spady, G. W. (1971). Dropouts from Higher Education: Toward an Empirical Model. *Interchange*, 2 (3), 38-62.
- Tideman, E. (2007). Face off: should professional female athletes be paid the same as male? *The Whit Online*. Retrieved Oct 14, 2007, from <http://media.www.thewhitonline.com/media/storage/paper291/news/2007/10/04/Sports/Face-Off.Should.Professional.Female.Athletes.Be.Paid.The.Same.As.Male.Yes-3012771.shtml>
- Wolverton, B. (2006). Graduation rates remain at record high. *The Chronicle of Higher Education*, LII (21), A41-43.