The Effectiveness of a Learning Strategies Course on College Student-Athletes' Adjustment, Use of Learning Strategies, and Academic Performance

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ABSTRACT

We examined the effectiveness of a learning strategies course in assisting at-risk male and female freshmen student athletes in improving their academic performances. The at-risk student athletes reported improvements across a wide range of study skills, such as comprehension, concentration and use of test-taking strategies, during their first semester of college when they were enrolled in the course. In comparison to regularly admitted student-athletes who did not take the course, the at-risk student athletes earned comparable grades during their first two semesters. Although neither academic nor noncognitive variables predicted the male student athletes first and second semester GPA's, female athletes' ability to manage their time as well as their willingness to take responsibility for their learning was positively related to their academic performances. Regarding their adjustment to college, the at-risk student athletes showed improvement in the personal/emotional area, but slight decreases with respect to academics and social relationships. Overall, these findings support learning strategies courses as an effectiveness mechanism for improving the academic performance of at-risk student athletes.

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During late adolescence and early adulthood, many developmental tasks must be confronted, such as establishing and developing relationships, becoming autonomous, achieving competence, and broadening one's horizons (Chickering, 1969). This time period traditionally coincides with the beginning of college, and new college students must adapt not only to these developmental challenges, but also to the need to develop self-regulatory skills to better handle the higher level of academic demands (Zimmerman, 1998). Unfortunately, many incoming undergraduates are not prepared for the social, personal, and academic changes they will face in college (Chartrand & Lent, 1987), making the first year a critical period in which to offer students assistance with their adjustment to and ultimately, retention in, college (Chickering, 1969; Noel, Levitz, & Saluri, 1985; Upcraft & Gardner, 1989).

Levitz and Noel (1989) advocated that freshmen interventions should focus on helping students adapt academically, socially, and personally. Specifically, interventions should help students feel a part of their new environment, work toward academic goals (e.g., choose a major, make progress toward a degree), be successful in meeting the increased challenges of college (e.g., live independently, manage time wisely), and be successful in the classroom (Levitz & Noel, 1989). Some commonly used freshmen interventions include freshman orientation programs, brief counseling, study skills training, freshman academic advising, mentoring programs, health and wellness programs, and freshman seminars/student success courses (Upcraft & Gardner, 1989).

Student success courses, which represent one successful intervention (Davis-Underwood & Lee, 1994; Howard & Jones, 2000; Maisto & Tammi, 1991; Petrie & Helmcamp, 1998; Robbins & Smith, 1993; Schwitzer, McGovern, & Robbins, 1991), generally are structured to provide students with information about campus services, promote involvement in campus activities, teach essential life and study skills, and facilitate meaningful faculty-student interactions and the development of peer social relationships (Upcraft & Gardner, 1989). In addition to being effective, student success courses provide institutions with an economical, systematic, and practical way to provide information to a large number of students (Petrie & Helmcamp, 1998). Although the exact content of these courses may vary across institutions (Gordon & Grites, 1984),

they generally cover academic/learning strategies (e.g., note-taking and reading skills), career development, self-regulatory strategies (e.g., goal-setting and self-monitoring), communication, health and wellness (e.g., nutrition and alcohol use/abuse), stress and coping, personality development, diversity, and campus involvement.

College student-athletes face all the challenges of a typical undergraduate, yet they also must cope with stressors that are specific to their experiences, such as balancing academic and athletic interests and paying special attention to physical health and performance (Parham, 1993). At higher competitive levels, such as collegiate sport, male athletes and athletes from revenue sports often focus more energy on and are more motivated toward their athletic, rather than their academic, pursuits (Gaston-Gayles, 2005). Such a narrowing of focus can increase the chances of athletic success, but interfere with classroom performance (Pearson & Petitpas, 1990).

Howard (1993) argued that a student athlete should remain a student first, and an athlete second, yet he recognized that there were a number of reasons this does not occur. First, not only must athletes live up to the expectations of their coaches and professors, the National Collegiate Athlete Association (NCAA) requires them to meet specific academic/eligibility requirements concerning minimum grade point averages, selection of an academic major, and completion of a certain percentage of classes (http://www.ncaa.org/library/membership/division_i_manual/2004-05/2004-05_d1_manual.pdf). Second, although there are NCAA rules regulating the amount of time that student-athletes are allowed to be involved in their sport, there are many hours of "voluntary" practices and workouts, such as weights and conditioning, film watching, and meetings, in which athletes are expected to participate to ensure playing time and avoid repercussions from a coaching staff that believes extra practice is necessary. These extra sport demands can limit the amount of time an athlete has to devote to academics. Third, competitions, and even practices, may be viewed by coaches (and athletes) as more important than academics. Student-athletes often miss class because of sport commitments, yet would rarely miss a competition or practice because of an academic responsibility. Thus, they may feel obligated to fulfill their role as a scholarship athlete, including attending all practices and competitions, yet in doing so be perceived as neglecting their academic responsibilities. Because of these multiple competing demands and role conflicts, athletes may be at risk for poor academic performance. In addition, college student-athletes are forced to confront these challenges in the presence of immense public scrutiny, limited time, and of-

ten a lack of necessary and available resources (Gabbard & Halischak, 1993). Although university student-athletes typically have access to general campus services, such as orientation programs, counseling, and tutoring, they may underutilize these services when compared to nonathlete students (Pinkerton, Hinz, & Barrow, 1989; Watson, 2005). Ferrante and Etzel (1996) argued that the high visibility of many student-athletes, limits on their time, and belief that they can handle their own problems contribute to this underutilization. In addition, student-athletes may perceive their athletic department as insular and able to address all of their needs. This belief may lead them to inadvertently ignore important services, such as counseling, that exist outside of the athletic department (Ferrante & Etzel, 1996). The reality, however, is that athletic academic counselors spend most of their time on academic advising related issues, leaving little time for the social, personal, and developmental concerns of student-athletes (Ferrante & Etzel, 1996).

Historically, interventions with student-athletes have focused on performance enhancement, rather than overall well-being and adjustment (Gould, Tammen, Murphy, & May, 1989). However, in the last 15 years, researchers have developed interventions that broadly address student athletes' academic, personal, social, and athletic needs (Denson, 1992). For example, the NCAA allocated funds to support broad-based services, such as the CHAMPS/Life Skills Programs (http://www1.ncaa.org/eprise/main/membership/ed_outreach/champs-life_skills/program.html.) at universities and colleges. Researchers have developed other programs, such as the Life Development Intervention (LDI; Danish & D'Augelli, 1983, Danish, Petitpas, & Hale, 1993) and the Student Services for Athletes (Jordan & Denson, 1990), to help student-athletes be successful in school and life. Young and Sowa (1992) found that services whose purpose was to ease the transition to college are effective during the first semester, particularly for African-American student-athletes.

Although student-athlete interventions, such as student success courses, have been described, there has been little research on their effectiveness (Denson, 1992). In one study that did examine this type of program, Albitz (2002) compared first-year student-athletes who were and were not enrolled in a student success class on retention and intent to remain in college after the first semester. The course was a 1-credit pass/fail seminar that included topics such as time management, goal-setting, library resources, nutrition, study skills, stress management, university history, resume writing, note-taking, test-taking, and career development. Albitz found no differences between the groups in terms of retention

rates; however, the student-athletes who participated in the course reported that the course positively influenced their goal to remain in and graduate from college.

Although the Albitz (2002) study did evaluate the effectiveness of a student-athlete success course, it was limited in several important ways. First, the course itself was only one credit hour and, although the instructor encouraged out of class contact, students were only in the class one hour per week, which falls short of the more ideal three contact hours per week. Second, although Albitz introduced many important topics, the depth and breadth of this coverage was limited by the time available. In any student success course, topics such as self-regulation, learning styles, personality, communication, and health/wellness also should be introduced and covered in sufficient depth to promote not only a conceptual understanding but also a practical applicability. Third, Albitz did examine retention, an important academic outcome, but did not consider the students' actual academic performance (i.e., GPA), their adjustment to college, and the extent to which they learned and adopted the skills and strategies being taught. Fourth, Albitz did not consider the potential influence of gender on academic performance. Past research has demonstrated that male and female athletes do respond differently to academic situations and gender should be considered in future studies (Gaston-Gayles, 2005; Petrie, Andersen, & Williams, 1996)

In the current study, we addressed these limitations by examining the effectiveness of a 3-credit hour comprehensive learning strategies course that is required of freshmen students who do not meet the university's published academic requirements for college entrance exam scores and high school percentile rank and enter through an individual review process conducted by the university's office of admissions. This review process considers factors beyond the traditional academic measures, including external recommendations, written statement by the applicant, and extracurricular activities in which the student engaged while in high school.

The first goal of the study was to determine whether this course helped freshmen student athletes adjust to college during their first semester and earn higher GPA's. The second goal was to determine how student-athletes' use of self-reported study strategies changed during the semester they were in the class. Third, we wanted to determine the extent to which academic adjustment and self-reported learning strategies predicted the student-athletes' GPA's during their first and second semesters in college. In each instance, we considered the potential influence gender would have on the outcome.

METHOD

Participants

Participants included 129 freshman student-athletes (Female = 72 and Male = 57) from a large southern university, representing the following sports: women's volleyball (n = 5), tennis (n = 5), swimming and diving (n = 16), track and field (n = 16), golf (n = 4), soccer (n = 8), softball (n = 13), and basketball (n = 5), and men's football (n = 39), golf (n = 3), track and field (n = 14), and basketball (n = 1). Eighty-six participants were enrolled in the student-athlete PSYC 1000 class, either in Fall 2003 or Fall 2004; forty-three were student-athletes who entered the university during the same time but were not required to enroll in the course because their test scores and high school grades met or exceeded the university's academic requirements for open admission. At this university, approximately 67% of incoming freshmen student athletes and 25% of incoming freshmen nonathletes are required to take the course each year. All student-athletes who enrolled in the course were mandated as a condition of their admission. *Race/ethnicity was*: 56% Caucasian, 33% African-American, 6% Hispanic, 1% Asian, and 3% other. Institutional Review Board approval was obtained and all student-athletes signed an informed consent form before voluntarily participating in the study.

Measures

Demographic information. A demographic questionnaire (DQ) was developed to obtain information regarding age, gender, racial/ethnic group, and sport.

Academic performance. Student-athletes' previous academic performance (SAT scores) and college grade point averages (GPA's) for fall and spring semesters were used as measures of academic performance. Although semester GPA is not a perfect indicator of academic performance, it was used because it represents the best proxy of cognitive development and academic achievement available within the college environment (Nettles, Thoeny, & Gosman, 1986). In addition, all student athletes were advised by the same academic counselor and had to follow NCAA rules regarding progress toward an academic degree. Based on these factors, we were confident that GPA would be a valid indicator for this group of student athletes.

Learning and Study Strategies Inventory. The 77-item Learning and Study Strategies Inventory (LASSI, Weinstein, 1987) assesses students' uses of 10 different learning and study strategies and methods,

including: attitude (8 items; general attitude and motivation about being successful in school and in implementing the necessary behaviors/ strategies to be successful), motivation (8 items; motivation and acceptance of responsibility for performing the specific tasks associated with academic success), time management (8 items; ability to balance the many competing demands of college), anxiety (8 items; how tense/ anxious students are when approaching their academic tasks), concentration (8 items; ability to concentrate and direct attention to school and studying), information processing (8 items; students use of deep level processing skills to facilitate understanding, storage and recall), selecting main ideas (5 items; ability to identify important material that needs additional study/attention), study aids (8 items; ability to develop and use study aids that support learning, retention, and recall), self-testing (8 items; use of self-monitoring and self-testing of material), and test strategies (8 items; knowledge and use of effective test preparation and test-taking strategies.

Participants respond to each item on a 5-point Likert scale according to how well the statement describes them, ranging from 1, *not at all typical*, to 5, *very much typical*. Total scores for each subscale are obtained by reverse scoring the appropriate items and then summing across the items. Scores are then transformed into percentile ranks so the student can determine how well he or she did compared to the norm groups. Higher scores indicate better study strategies in that particular area, and a high score on the anxiety subscale indicates better anxiety management.

Internal consistency reliabilities have ranged from .68 to .86 and test-retest coefficients (3-4 week interval) range from .72 to .85 (Weinstein, 1987). The LASSI is widely used in universities in the United States and has been shown to be effective in predicting academic performance (Yip & Chung, 2002). In addition, LASSI profiles from academically "at-risk" students are significantly lower than profiles of their normal-achieving counterparts, suggesting the LASSI can be effective in identifying study skills deficits (Proctor, Prevatt, Adams, Hurst, & Petscher, 2006).

Student Adaptation to College Questionnaire. The 67-item Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1989) measures individuals' perceived academic adjustment (24 items; how well students manage educational demands of college), social adjustment (20 items; how well students deal with interpersonal experiences at the university), personal-emotional adjustment (15 items; to what extent the student is experiencing psychological distress), and institutional attach-

ment (15 items; degree to which students feel affiliation toward their college). Participants rate each item on a 9-point scale, which ranges from 1, *applies very closely to me*, to 9, *does not apply to me at all.* Total scores are obtained for each subscale by summing across the appropriate items, with higher scores indicating better adjustment.

High internal consistency reliabilities were found for all scales (ranging from .77 to .91) and all have been shown to be useful in predicting attrition and evaluating course effectiveness (Baker & Siryk, 1989). Because the measured variables are expected to change as a function of the student's experience, internal consistency estimates are more useful than test-retest coefficients (Baker & Siryk, 1989). In particular, the institutional attachment subscale and academic adjustment have been found to be related to retention and academic performance, respectively. A detailed summary of the SACQ research suggests that this instrument is a valid and reliable measure of college student development (Baker & Siryk, 1989).

Learning Strategies Course

The learning strategies course (PSYC 1000) is based on psychological and educational theories and models associated with learning, self-regulation, personal and career development, communication, stress and coping, and health. The overall goals of the course are to (1) assist students in developing effective strategies to be proficient learners, (2) increase their understanding of how people change and develop, and (3) apply this knowledge across academic programs and in all areas of their lives to make positive, self-enhancing changes. Specifically, students are introduced to study strategies (e.g., note taking, effective reading) and self-regulatory approaches (e.g., time management, goal-setting), and given the opportunity to learn more about themselves in relationships, in careers/majors, with respect to health-related behaviors, and in stress and coping. Assessments on personality (i.e., Myers-Briggs Type Indicator; Myers, 1998), career interests (i.e., Self-Directed Search; Holland, Fritzsche, & Powell, 1994), multiple intelligences, learning strategies (i.e., Learning and Study Strategies Inventory), and learning styles are used to help students determine their strengths and weaknesses and then individualize their learning and adoption of the strategies taught.

The course is based on the same syllabus and lesson plans that are used in other PSYC 1000 sections for students who are not athletes, however, the lesson plans are tailored to encompass the specific demands of the student-athlete experience. For example, the lesson on time man-

agement included strategies on how to plan study times when traveling to sport competitions, and the section on healthy lifestyle choices included information on how to make better nutritional choices to fuel their bodies for athletic performance. These changes were made to refine the course material to make it more personally meaningful for the student-athletes, which ideally would improve their comprehension and adoption of new strategies learned.

Procedure

Participants included all freshman student-athletes who entered the university in Fall 2003 or Fall 2004. Both years were used to provide a larger sample to examine the effectiveness of the course (because the university's admission requirements and the course itself were consistent across these 2 years, combining the two cohorts was an acceptable approach). The participants in the class completed consent forms and took the LASSI in the 2nd or 3rd week of the semester, the SACQ during the 4th week of the semester, and the LASSI and SACQ again during the 12th week of classes. The student-athletes who were not enrolled in the course did not complete the LASSI or SACQ due to the fact that these student athletes were spread across all teams, were not required to attend study hall, and were not together in another course or location that would allow the questionnaires to be administered in a controlled, supervised manner. Previous academic performance (SAT scores) and GPA's (Fall 2003 and Spring 2004 for the Fall 2003 cohort, and Fall 2004 and Spring 2005 for the Fall 2004 cohort) were collected from the university. Within each cohort, the fall semester grades represented the student athletes' first semester performance and the spring semester grades their second semester performance. In keeping with the athletic department's guidelines for release of academic data, we obtained data from the academic advisors. Confidentiality was maintained by assigning each student-athlete a code, which was then matched to academic data.

Data Analyses

To determine the effect of the course and gender on student athletes' GPAs during their first and second semester of college, a 2 (gender – male vs. female) X 2 (class status – having taken class vs. not having taken class) ANCOVA was used. Previous academic performance (i.e., SAT scores) was used as the covariate to control for prior academic preparedness and experiences. Because the sample sizes were unequal, the general linear models procedure for analysis of variance was used. To

examine the extent to which student athletes who had taken the course changed in regard to their reported use of learning strategies and adjustment over the course of their first semester in college, 2 (gender) X 2 (time – pretest vs. posttest) repeated measures ANOVAS were used. Because our primary interest were the changes that might have occurred over the course of the semester from being in the Psychology 1000 class, only the interaction and repeated measures effects are reported. Finally, regression analyses were used to predict GPA after the first and second semesters of college. For each regression equation, previous academic performance (i.e., SAT scores) and academic adjustment scores at Week 12 were entered first and second, respectively. Next Week 12 LASSI subscales were allowed to enter in a stepwise approach. To determine the extent to which gender influenced the relationships of these variables to GPA, each analysis was run separately for male and female athletes. Prior to beginning all analyses, appropriate statistical checks (i.e., Box's M test for homogeneity of slopes for the covariate, Levine's test for homogeneity of variance, and Central Limit Theorem for sample size) were conducted and assumptions for all analyses were met. Alpha was set at .05 for all analyses. Because of missing data, which was due to some data being unavailable (e.g., not all students submit SAT scores) and to some student athletes not completing either the first or second administrations of the LASSI and SACQ, the number of participants for each analysis varies slightly.

RESULTS

First, we compared the two groups of student-athletes, those who were enrolled in PSYC 1000 (n = 83) and those who were NOT enrolled in PSYC 1000 (n = 29) on several demographic and academic variables. Regarding prior academic performance, the PSYC 1000 students had significantly lower SAT scores (M = 898.8, SD = 117.7) than the nonenrolled student-athletes (M = 1021.2, SD = 165.1), F (1, 111) = 18.75, $p < .001$, partial $h^2 = .14$. This finding was expected because SAT scores are used in admission decisions to determine whether student-athletes must enroll in the PSYC 1000 course. There were, however, no significant differences between the groups on age, F (1, 72) = 1.84, p = .18, or ethnicity/race, c^2 (5, N = 129) = 8.35, p = .14.

Previous academic performance (i.e., SAT scores) was a significant covariate for first semester GPA, F (1, 108) = 10.55, $p < .005$, partial $h^2 = .09$, and second semester GPA, F (1, 107) = 11.89, $p < .001$, partial $h^2 = .10$. With SAT as the covariate, there were no significant gen-

der by class interactions for first semester, F (1, 108) = .10, p > .70, partial h^2 = .001, or second semester, F (1, 107) = .00, p > .99, partial h^2 = .000, GPAs. In addition, there were no class effects for first, F (1, 108) = 3.86, p > .05, partial h^2 = .04, and second semester, F (1, 107) = 1.60, p > .20, partial h^2 = .02, grades. Students in the PSYC 1000 course (Fall GPA - M = 2.54, SE = .07; Spring GPA - M = 2.45, SE = .08) earned grades that were comparable to the student athletes who did not take the class (Fall GPA - M = 2.84, SE = .13; Spring GPA - M = 2.67, SE = .15). These findings suggest that, after controlling for previous academic performance, the at-risk student-athletes who were enrolled in PSYC 1000 performed as well as the student-athletes who did not have the class. Regarding gender, a main effect was found for first semester, F (1, 108) = 17.58, p < .001, partial h^2 = .14, and second semester, F (1, 107) = 20.13, p < .001, partial h^2 = .16, GPAs. Female student athletes (Fall GPA - M = 2.99, SE = .10; Spring GPA - M = 2.92, SE = .11) earned higher grades than their male counterparts (Fall GPA - M = 2.39, SE = .11; Spring GPA - M = 2.20, SE = .12). This finding suggests that, even after controlling for academic achievement differences, the female student athletes still performed better academically than the men.

For the LASSI, there were no significant gender by time interactions on any subscale, except Self-Testing, Wilks' Lambda = .92, F (1, 68) = 5.92, p < .05, partial h^2 = .08. For this subscale, male athletes reported significant improvements over the course of the semester in their use of self-monitoring and self-testing strategies (Week 4 - M = 30.26, SD = 22.28; Week 12 - M = 46.89, SD = 28.93), whereas the female athletes had no significant changes in their self-reported use of this important study strategy (Week 4 - M = 54.30, SD = 23.42; Week 12 - M = 52.14, SD = 28.97). Also, there were no significant Time effects for the following subscales: Attitude, Wilks' Lambda = .98, F (1, 68) = 1.27, p > .26, partial h^2 = .02; Motivation, Wilks' Lambda = .95, F (1, 68) = 3.43, p > .07, partial h^2 = .05; Selecting Main Ideas, Wilks' Lambda = .96, F (1,68) = 3.21, p > .08, partial h^2 = .05; and Study Aids, Wilks' Lambda = .96, F (1, 68) = 2.77, p > .10, partial h^2 = .04. These results suggest that, over the course of the semester when they were in the class, the athletes did not change in their general attitude toward and motivation about being successful in school, their accepting responsibility for performing the specific tasks associated with academic success, their ability to identify important material, and their development and use of study aids to support their learning.

There were, however, significant Time effects for Anxiety, Wilks' Lambda = .83, F (1, 68) = 14.08, p < .0001, partial h^2 = .17, Concentra-

tion, Wilks' Lambda = .85, F (1, 68) = 11.73, p < .01, partial h^2 = .15, Information Processing, Wilks' Lambda = .71, F (1, 68) = 27.80, p < .001, partial h^2 = .29; Time Management, Wilks' Lambda = .88, F (1,68) = 9.12, p < .01, partial h^2 = .12; and Test Taking Strategies, Wilks' Lambda = .88, F (1,68) = 8.93, p < .01, partial h^2 = .12. These findings suggest that, from Week 4 to Week 12, the student-athletes did not feel less anxious about school and their academic work, were better able to focus/concentrate when studying, had improved comprehension in their academic work, had improved their test-taking strategies, and could better cope with competing time demands of being a college student and an athlete. See Table 1 for means and standard deviations across time.

For the SACQ, there were no significant gender by time interactions on any subscale ($p > .05$), and there was no main effect for time on Institutional Attachment, Wilks' Lambda = .98, F (1, 79) = 1.18, $p > .28$, partial h^2 = .02. There were, however, time main effects for Social Adjustment, Wilks' Lambda = .93, F (1, 80) = 6.45, $p < .05$, partial h^2 = .08, Academic Adjustment, Wilks' Lambda = .90, F (1, 80) = 9.14, p < .005, partial h^2 = .10, and Personal Adjustment, Wilks' Lambda = .88, F (1, 80) = 10.98, p < .001, partial h^2 = .12. These findings suggest that, from Week 4 to Week 12, the student-athletes indicated significant improvements in their adjustment to the personal/emotional demands that accompany the transition to college, but reported greater problems adjusting to the more rigorous academic demands of college and the challenge of integrating themselves into a new social network. The student-athletes did not report significant changes in their attachment to or affiliation with the university.

Regression analyses were run separately for the male and female student-athletes. For the male's first semester GPA, SAT scores and Week 12 academic adjustment explained a nonsignificant 11% of the variance, F (2, 24) = 1.3, $p > .29$; none of the LASSI subscales entered the model. For second semester GPA, SAT scores and Week 12 academic adjustment again were nonsignificant predictors, accounting for only 6% of the variance, F (2, 24) = .71, $p > .5$.

For the female's first semester GPA, SAT scores accounted for 20% of the variance, F (1, 36) = 8.94, $p < .01$, whereas Week 12 academic adjustment added only an additional 2%, F (1, 35) = .86, $p > .36$. When the LASSI subscales were considered, Week 12 Time Management entered the model and accounted for an additional 10% of the variance, F (1, 34) = 5.35, $p < .05$. Overall, the model was significant, F (3, 34) = 5.44, p < .005, with higher SAT scores and greater ability to balance the competing demands of college being related to better grades.

For female's second semester GPA, SAT scores and Week 12 academic adjustment accounted for a nonsignificant 7% of the variance, F (2, 34) = 1.18, p > .31, whereas the LASSI Motivation subscale explained an additional 24% of variance, F (1, 33) = 11.72, $p < .005$. Overall, the model was significant, F (3, 33) = 4.95, $p < .01$, with higher levels of academic motivation at the end of the fall semester being related to better classroom academic performance during the subsequent spring.

DISCUSSION

This study examined the effectiveness of a learning strategies course in helping at-risk male and female college student-athletes learn essential study strategies, adjust to college, and earn higher GPA's over the course of the semester. Both male and female student athletes who took the course reported significant improvements in their abilities to manage anxiety, concentrate and focus their attention, comprehend information when learning new material, successfully apply strategies when taking exams, and manage their time. Male student athletes improved in their abilities to monitor and test themselves to evaluate their learning, whereas female student athletes already were high on this dimension and did not change over the course of the semester. Given the course curriculum, which focused on developing foundational learning strategies, such as note taking, effective reading and time management, and on learning to regulate one's behaviors, motivation, thoughts and feelings, these improvements were expected. These findings also are consistent with Petrie and Helmcamp (1998), who found that nonathlete college students enrolled in a similar type of learning strategies course reported significant improvements over the semester in organizing new information in meaningful ways, using techniques to increase retention, and experiencing less anxiety when studying or taking exams. Taken together, these findings argue for the effectiveness of learning strategies courses in helping students develop the cognitive and academic strategies that are necessary for being successful in college.

Both the male and female student-athletes who took the course reported poorer academic and social adjustment over the course of the semester, hetter personal/emotional adjustment, and no change in attachment to the institution. Although we had expected improvements in all areas of adjustment, the declines in the academic and social areas might best be understood by considering Stern's (as cited in Baker, McNeil, & Siryk, 1985) idea of the "freshman myth." That is, during the beginning of their first semester, freshman often overestimate their abilities to cope

with the academic demands and social realities that accompany the transition to college, which is likely due to the fact that they have not been at school long enough to face the very real challenges that are a part of a system of higher education. Thus, the measures of adjustment taken during the 4th week of the semester may be an inflated, and inaccurate, indicator of how well the students are doing academically and socially. In fact, it may not be until the end of the semester that more realistic appraisals of their adjustment in these areas are possible, with the scores obtained during the 12th week of the study reflecting the student athletes' true level of adjustment. If so, then the decline in scores may not indicate that the course was completely ineffective in helping the student athletes adjust to college. In fact, if the student athletes had not been not in the course, their adjustment (and thus scores on the SACQ) may have been even lower. Additional research is needed in which measures of adjustment are taken at multiple points across the semester to determine if a natural decline in scores would be attenuated through a student athlete's involvement in a learning strategies course.

Despite the fact that the student-athletes who took the course were considered academically at-risk (i.e., had lower SAT scores) at time of admission, they performed as well as the student-athletes who entered the university under normal admission criteria on first and second semester GPAs. In addition, overall, the female student athletes earned higher grades than their male counterparts. These findings are consistent with previous research (Howard & Jones, 2000; Kiger & Lorentzen, 1988), and suggest two things. First, learning strategies courses are particularly effective in helping academically at-risk students overcome their academic deficiencies and succeed in college. Specifically, these courses teach fundamental cognitive and academic strategies that the student athletes may have been lacking, but are necessary for achieving success in college. By attending a course and being introduced to these concepts and strategies, student athletes have the opportunity to put them into practice in all areas of their lives, particularly their other classes, and thus reap personal and academic benefits. Second, female student-athletes, perhaps by virtue of their stronger academic motivation and males' stronger athletic motivation (Gaston-Gayles, 2005), earn higher grades in college classes than male athletes. This finding suggests that developing higher levels of academic motivation may be particularly relevant to male athletes' college success and a focus for athletes' academic counselors.

For the male student athletes, neither previous academic performance (i.e., SAT scores), academic adjustment, nor any LASSI sub-

scale predicted first or second semester grades. Although it is possible that the lack of significance was due to the low power associated with this regression analysis, this finding is consistent with past research that has found no relationship between SAT scores (or other achievement tests) and college GPAs, particularly for minority and male athletes (Sedlacek & Adams-Gaston, 1992; Sellers, 1992; Walter, Smith, Hoey, Wilhelm, & Miller, 1987). For female student athletes, SAT scores predicted first, but not second, semester GPAs, though the strength of the relationship was small. Regarding the noncognitive variables (those not measuring achievement or aptitude), academic adjustment was not related significantly to first or second semester grades, though the female student athletes' time management abilities and level of motivation during the 12th week of the semester were. The better they could manage the competing demands of athletics and academics and, during the spring semester, the more they accepted the responsibility for performing the specific tasks associated with academic success, the better grades they earned. Specifically, this finding suggests that female student athletes who take responsibility for their learning and for applying effective learning strategies, in particular the ability to manage their time effectively, generally will be successful academically. Thus, student success courses should not only introduce specific cognitive and academic strategies, but should foster higher levels of personal motivation toward school and a self-responsibility attitude toward learning. Generally, this finding supports the position that noncognitive variables are important predictors of college academic performance (Ting & Robinson, 1998). Because noncognitive variables often account for a significant portion of college GPA variance, researchers interested in understanding and predicting college student athletes' performances should include them in future studies.

Although there were many important findings, this study was limited in several ways. First, there was no direct comparison control group of at-risk student athletes who did not take the course but completed all questionnaires. At the university where the study was conducted, all at-risk student athletes are mandated to take the course, and thus, a true comparison group could not be comprised. We did, though, compare the freshmen student athletes who enrolled in PSYC 1000 to the freshmen student athletes who entered the university at the same time, but were not mandated to take the course, to examine how effective the course was on helping student-athletes earn higher GPA's. Second, only self-reports were used to measure adjustment and use of study strategies. The measures we used, however, were psychometrically sound and have

been used consistently in this type of academic outcome research. In future research, other behaviorally based measures might be used, such as instructor reports on observed study strategies. Finally, the measures of adjustment and study strategies were taken only during the first semester, and then only during weeks 3-4 and 12, so longer-term changes as well as more specific variations within the first semester could not be determined.

To address these limitations, future research may want to include more comparison groups, such as nonathletes who are mandated to take the strategic learning course. Such a comparison can determine the relative utility of such a course for student athletes versus students in general. In addition, administering the LASSI and SACQ at multiple times (more than pre and post) throughout the semester will allow for a determination of the pattern of changes over time and provide illumination about critical times during a semester in which student athletes may be experiencing difficulties in adjustment. In such instances, comparing adjustment and learning scores to students who are not in the strategic learning course will be important to ascertain what effects the course may be having on adjustment over time. Finally, examining the relationship of these variables to academic performance and the effectiveness of the course over a longer period of time, for example the first two years of school, would be important for determining the length and strength of the intervention's effects.

Overall, results from the current study suggest that a learning strategies course tailored to meet the challenges of first-year student-athletes has a positive effect on academic performance and the development of essential study strategies. Although other factors also may play a role, a learning strategies course seems to be a helpful intervention for universities to employ in an attempt to ease the transition to college. In particular, athletic departments may want to incorporate this type of class in their CHAMPS/Life Skills program or other programs that are aimed at the overall well being of student-athletes. Such a course would be an efficient and effective way to help student-athletes learn necessary study strategies, adjust to college, and perform successfully in their classes.

REFERENCES

Albitz, F. L. (2002). The influence of a student-athlete first year success course on college retention. Dissertations Abstracts International Section, 62, 12-A.

Baker, R. W., McNeil, O. V., & Siryk, B. (1985). Expectation and reality in freshman adjustment to college. Journal of Counseling Psychology, 32, 94-103.

Baker, R. W., & Siryk, B. (1989). SACQ: Student adaptation to college questionnaire manual. Los Angeles: Western Psychological Services.

Chartrand, J. M., & Lent, R. W. (1987). Sports counseling: Enhancing the development of the student-athlete. Journal of Counseling and Development, 66, 164-167.

Chickering, A. W. (1969). Education and identity. San Francisco, CA: Jossey-Bass.

Danish, S., & D'Augelli, A.R. (1983). Helping skills II: Life development intervention. New York: Human Sciences.

Danish, S. J., Petitpas, A. J., & Hale, B. D. (1993). Life developmental intervention for athletes: Life skills through sports. The Counseling Psychologist, 21, 352-382.

Davis-Underwood, M., & Lee, J. A. (1994). An evaluation of the university of North Carolina at Charlotte freshman seminar, Journal of College Student Development, 35, 491-492.

Denson, E. L. (1992). Integrating support services for student-athletes: Possible pathways. Academic Athletic Journal, Fall, 16-22.

Ferrante, A. P., & Etzel, E. (1996). Counseling college student-athletes: The problem, the need, 1996. In E. F. Etzel, A. P. Ferrante, & J. W. Pinkney (Eds.), Counseling college student-athletes: Issues and interventions (2nd Ed.). (pp. 3-26).

Gabbard, C., & Halischack. (1993). Consulting opportunities: Working with student-athletes at a university. The Counseling Psychologist, 21, 386-398.

Gaston-Gayles, J. L. (2005). The factor structure and reliability of the Student Athletes' Motivation toward Sports and Academics Questionnaire (SAMSAQ). Journal of College Student Development, 46, 317-327.

Gordon, V. N., & Grites, T. J. (1984). The freshman seminar course: Helping students succeed. Journal of College Student Development, 25, 315-320.

Gould, D., Tammen, V., Murphy, S., & May, J. (1989). An examination of U.S. Olympic sport psychology consultants and the services they provide. The Sport Psychologist, 4, 300-312.

Holland, J. L., Fritzsche, B. A., Powell, A. B. (1994). SDS: Self-directed search. Odessa, FL: Psychological Assessment Resources, Inc.

Howard, G. S. (1993). Sports psychology: An emerging domain for counseling psychologists. The Counseling Psychologist, 21, 349-351.

Howard, H. E., & Jones, W. P. (2000). Effectiveness of a freshman seminar in an urban university: Measurement of selected indicators. College Student Journal, 34, 509-515.

Jordan, J. M. & Denson, E.L. (1990). Student services for athletes: A model for enhancing the student-athlete experience. Journal of Counseling & Development, 69, 95-97.

Kiger, G., & Lorentzen, D. (1988). The effects of athletic participation on university academic performance: A comparison of athletes and the general student population. College Student Journal, 22, 287-293.

Levitz, R., & Noel, L. (1989). Connecting students to institutions: Keys to retention and success. In M. L. Upcraft, J. N. Gardner & Associates (Eds), The freshman year experience (pp 65-81). San Francisco: Jossey-Bass.

Maisto, A. A., & Tammi, M. W. (1991). The effect of a content-based freshman seminar on academic and social integration. Journal of the Freshman Year, 3, 29-47.

Myers, I. B. (1998). Myers-Briggs Type Indicator. Palo Alto, CA: Consulting Psychologists Press, Inc.

National Collegiate Athletic Association CHAMPS/Life Skills Program. (2005). Retrieved July 15, 2005 from http://www1.ncaa.org/eprise/main/membership/ed_outreach/champs-life_skills/program.html

National Collegiate Athletic Association Manual. (2005). Retrieved June 25, 2005 from http://www.ncaa.org/library/membership/division_i_manual/2004-05/2004-05_d1_manual.pdf

Nettles, M., Thoeny, A., & Gosman, E., (1986). Comparative and predictive analyses of black and white students' college achievement and experiences. Journal of Higher Education, 57, 289-318.

Noel, L. Levitz, R. & Saluri, D. (eds.). (1985). Increasing student retention: Effective programs and practices for reducing dropout rate. San Francisco: Jossey-Bass.

Parham, W. D. (1993). The intercollegiate athlete: A 1990s profile. The Counseling Psychologist, 21, 411-429.

Pearson, R. E., & Petitpas, A. J. (1990). Transitions of athletes: Developmental and preventive perspectives. Journal of Counseling & Development, 69, 7-10.

Petrie, T. A., & Helmcamp, A. (1998). Evaluation of an academic study skills course. Journal of College Student Development, 39, 112-116.

Petrie, T. A., Andersen, M., & Williams, J. M. (1996). Gender differences in the prediction of college student-athletes academic performance. College Student Affairs Journal, 16, 62-69.

Pinkerton, R. S., Hinz, L. D., Barrow, J.C. (1989). The college student athlete: Psychological considerations and interventions. Journal of American College Health, 37, 218-226.

Proctor, B. E., Prevatt, F., Adams, K., Hurst, A., & Petscher, Y. (2006). Study skills profiles of normal-achieving and academically-struggling college students. Journal of College Student Development, 47, 37-51.

Robbins, S. B., & Smith, L. C. (1993). Enhancement programs for entering university majority and minority freshmen. Journal of Counseling & Development, 71, 510-514.

Schwitzer, A. M., McGovern, T. V., & Robbins, S. B. (1991). Adjustment outcomes of a freshman seminar: A utilization-focused approach. Journal of College Student Development, 32, 484-489.

Sedlacek, W., & Adams-Gaston, J. (1992). Predicting the academic success of student-athletes using SAT and noncognitive variables. Journal of Counseling & Development, 70, 724-727.

Sellers, R. (1992). Racial differences in the predictors for academic achievement of student-athletes in Division I revenue producing sports. Sociology of Sport Journal, 9, 48-59.

Ting, S. R., & Robinson, T. L. (1998). First year academic success: A prediction combining cognitive and psychosocial variables for Caucasian and African American students. Journal of College Student Development, 39, 599-610.

Upcraft, M. L., & Gardner, J. N. (1989). A comprehensive approach to enhancing freshman success. In M. L. Upcraft, J. N. Gardner, & Associates, (Eds.). The freshman year experience (pp. 1-12). San Francisco: Jossey-Bass.

Walter, T., Smith, D., Hoey, G., Wilhelm, R., & Miller, S. (1987). Predicting the academic success of college athletes. Research Quarterly for Exercise and Sport, 58, 273-279.

Watson, J.C. (2005). College student-athletes' attitudes toward help-seeking behavior and expectations of counseling services. Journal of College Student Development, 46, 442-449.

Weinstein, C. E. (1987). LASSI users manual. Clearwater, FL: H&H Publishing Co.

Yip, M. C. W., Chung, O. L. L. (2002). Relation of study strategies to the academic performance of Hong Kong University students. Psychological Reports, 90, 338-340.

Young, B. D., & Sowa, C. J. (1992). Predictors of academic success for black student athletes. Journal of College Student Development, 33, 318-324.

Zimmerman, B. J. (1998). Academic studying and the development of personal skill: A self-regulatory perspective. Educational Psychologist, 33, 73-86.

Footnotes

1 The course syllabus is available from the first author.

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Table 1. Mean Scores (and Standard Deviations) of Student Athletes' Reported Use of Study Strategies and Adjustment to College

Variables	Week 4	Week 12	*F*
LASSI Subscales (n = 68)			
Anxiety	47.02 (27.54)	57.06 (27.23)	14.08***
Attitude	29.65 (25.42)	32.79 (27.38)	1.27
Concentration	38.00 (24.79)	48.87 (25.32)	11.73**
Selecting Main Ideas	45.41 (25.07	52.28 (24.47)	3.21
Motivation	42.15 (29.27)	48.53 (28.72)	3.43
Information Processing	39.37 (23.87)	54.53 (26.20)	27.80***
Test-Taking	39.87 (26.53)	51.19 (27.60)	8.93**
Time Management	37.68 (26.08)	48.04 (25.29)	9.12**
Study Aids	46.17 (25.66)	52.49 (24.61)	2.77
Self-Testing	45.53 (25.47)	51 (28.69)	1.88
SACQ Subscales (n = 79)			
Institutional	43.47 (8.41)	42.53 (7.55)	1.18
Academic	48.89 (9.64)	45.35 (9.43)	9.14*
Personal/ Emotional	38.52 (10.46)	42.55 (10.20)	10.98**
Social	48.39 (8.35)	45.56 (9.43)	6.45*

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2. Regression Analyses for Variables Predicting Student Athletes' Semester GPAs (n = 61)

	Females			Males		
Variable	B	SE B	b	B	SE B	b
First Semester GPA						
Step 1						
Prev Aca Perf	.002	.001	.446**	.002	.001	.299
Step 2						
Prev Aca Perf	.002	.001	.448**	.002	.002	.322
Week 12 Aca Adj	.009	.009	.139	-.012	.019	-.129
Step 3						
Prev Aca Perf	.002	.001	.455**			
Week 12 Aca Adj	.002	.009	.036			
Week 12 Time Mgmt	.009	.004	.342*			
Second Semester						
Step 1						
Prev Aca Perf	.001	.001	.200	.002	.002	.226
Step 2						
Prev Aca Per	.001	.001	.204	.002	.002	.209
Week 12 Aca Adj	.011	.011	.158	.011	.024	.098
Step 3						
Prev Aca Perf	.001	.001	.155			
Week 12 Aca Adj	-.001	.011	-.009			
Week 12 Mot	.015	.004	524**			

Note. Females: First Semester GPA: R2 = .20** for Step 1; DR2 = .02 for Step 2; DR2 = .11* for Step 3. Second Semester GPA: R2 = .04 for Step 1; DR2 = .03 for Step 2; DR2 = .24** for Step 3. Males: First Semester GPA: R2 = .09 for Step 1; DR2 = .02 for Step 2; DR2 = .00 for Step 3. Second Semester GPA: R2 = .05 for Step 1; DR2 = .01 for Step 2; DR2 = .00 for Step 3

* $p < .05$; ** $p < .01$