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Comparisons of Risky Health Behaviors between Male and Female College Athletes and Non-athletes

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ABSTRACT

Recent data indicate disturbing trends in health problems in college students in this country. In addition, there is concern that athletes may be more at risk for certain health problems than are other student populations. We surveyed male and female athletes and non-athletes to compare the prevalence rates of alcohol behaviors, smoking and smokeless tobacco use, and disordered eating behaviors and body image dissatisfaction. We found that these behaviors differed by both gender and athletic status. However, the patterns are not consistent, with athletes being more vulnerable for certain risky behaviors and non-athletes being more vulnerable for others. Furthermore, these patterns also differ by gender. College administrators need to be aware of the different vulnerabilities that various populations face and be prepared to address different issues and treatment plans for male and female athletes and non-athletes.

Introduction

Recent data indicate disturbing trends in health problems in college students in this country (Douglas et al., 1997; O'Connor, 2001). In addition, there is concern that certain subgroups in the college population (e.g., athletes) may be more at risk for certain health problems than are other student populations. Because athletes may experience greater levels of stress than do non-athletes due to the dual demands of athletics and academics (Kimball & Freysinger, 2003; Papanikolaou, Nikolaidis, Patsiaouras, & Alexopoulos, 2003), the combination of these stressors can have a negative affect on athletes' physical and mental health. For example, a recent investigation found that almost half of the male athletes and slightly more than half of the female athletes interviewed indicated that stresses associated with sport participation that significantly affected their mental or emotional health (Humphrey, Yow, & Bowden, 2000). Moreover, studies have suggested that

college athletes who experience high levels of stress are more likely to practice bad health habits (Hudd et al., 2000). In addition, athletes may be more likely to experience psychological problems (Shirka, 1997), including low self-esteem (Hudd et al., 2000; Papanikolaou et al., 2003). In addition to mental health concerns, many athletes report physical health concerns as well, such as lack of sleep, continuous tension, fatigue, headaches, and digestive problems (Humphrey et al., 2000).

It is clear that further investigations need to be conducted to determine the potential negative and positive influences that participation in athletics may have on student health. Furthermore, few studies have examined the interaction between gender and athletic status (athlete v. non-athlete) on health behaviors and those that have examined both factors have found conflicting results. Only when we understand how these factors play a role in predicting health behaviors we will be able to design interventions appropriate for these populations. The following paragraphs review the literature for several health behaviors (alcohol consumption, smoking, disordered eating and body image dissatisfaction) posited to differ based on athletic status (athlete v. non-athlete) and gender. Because few studies have examined the effect of gender, athletic status, and their interaction on alcohol consumption, smoking, disordered eating and body image dissatisfaction, after examining the extant literature, the present study will discuss the effects of gender, athletic status, and their interaction on alcohol consumption, smoking, disordered eating and body image dissatisfaction.

Alcohol Consumption

The use of alcohol among college students is well documented and a recurrent finding from these studies is that male college students drink alcohol more frequently and in greater quantities than do female students (Capraro, 2000; Werner, Walker, & Green, 1994). In comparisons of alcohol consumption behaviors, men have been shown to drink greater quantities of alcohol, drink more frequently and drink until intoxication more frequently than do women (McCreary, Newcomb, & Sadave, 1999; Nelson & Wechsler, 2000). In fact, alcohol is the most widely used drug among male and female college athletes and 80% of NCAA athletes use alcohol and one-quarter binge drink at least once weekly, with the majority of these being men (National Collegiate Athletic Association, 1997).

Researchers have compared the drinking frequencies and quantities of alcohol consumed between athletes and non-athletes, but results have been mixed and may vary by gender. Some researchers suggest that athletes drink more frequently, and consume greater quantities of alcohol than do non-athletes (Leichliter, Meilman, Presley, & Cashin, 1998; Nattiv, Puffer, & Green, 1997). In fact, researchers have learned that both male and female athletes engage in binge drinking and drinking to intoxication more so than do their non-athlete counterparts (Wechsler & Davenport, 1997). However, Gutgesell, Moreau, and Thompson (2003) found that there are no differences between female athletes and non-athletes in quantity of alcohol consumed or in binge drinking, and if anything, female non-athletes may drink more often than do athletes. In addition, Koss and Gaines (1993) found that alcohol use in both males and female college students is lower in athletes than in non-athletes. Thus, it is unclear whether there are differences in the drinking patterns of athletes and non-athletes. The present study will attempt to shed light on this question by examining drinking patterns in both male and female athletes and non-athletes to determine

the separate effects of gender and athletic status, as well as their interaction.

Smoking

Similar to the mixed findings regarding the influence of athletic status on college student drinking, research concerning the influence of athletic status on smoking in college students is also mixed. For example, some researchers have found that being involved in athletics decreases smoking (Rigotti, Regan, Majchrzak, Knight, & Wechsler, 2002; Wechsler & Davenport, 1997). However, other researchers have suggested that there is no difference in smoking behaviors between athletes and non-athletes and that athletes actually use more smokeless tobacco (35%) than do non-athletes (14%; Hildebrand, Johnson, & Bogle, 2001; see also Nattiv et al., 1997). Finally, some studies have suggested that this may vary by gender, with male athletes using more smokeless tobacco than male non-athletes, but no differences in female athletes and non-athletes (Wechsler & Davenport, 1997).

Disordered Eating and Body Image Dissatisfaction

In 1994, the American Psychological Association estimated that 90% of people with eating disorders were women. In fact, a recent study of high school and college students found that women reported higher body dissatisfaction and eating disorders than did men (Hausenblas & McNally, 2004). However, studies are now suggesting that more males are being diagnosed with eating disorders (Braun, Sunday, Huang, & Halmi, 1998), and the amount of eating disordered behavior is increasing in both genders (Taub & Blinde, 1992). Thus, although researchers have found that women are more vulnerable to body image dissatisfaction and eating disordered behavior than are men, the gender gap appears to be closing. One purpose of the present study is to re-examine the question of whether there are still gender differences in eating disordered behaviors and body image dissatisfaction.

There is also concern for athletes, in particular female athletes, being more vulnerable to developing an eating disorder (Kirk, Singh, & Getz, 2001). However, not all studies find that athletes are at risk. A recent study of female athletes found that whereas athletes have lower scores in body dissatisfaction than do non-athletes, there are no differences in eating disorders between the two groups (Reinking & Alexander, 2005; see also Gutgesell et al., 2003; Hausenblas & McNally, 2004; Thompson & Gabriel, 2004 for reports of equivalent rates of eating disordered behavior in both athletes and non-athletes). Thus, it is currently unclear whether athletic status influences the presence of body image dissatisfaction and disordered eating and whether this might vary by gender. The present study will examine both body image dissatisfaction and disordered eating in male and female college athletes and non-athletes to better ascertain the influence of gender, athletic status, and their interaction on the presence of body image dissatisfaction and disordered eating in college students.

Present Study

Because of conflicting results in previous research and the fact that not all studies examined both males and females or both athletes and non-athletes, we surveyed male and female athletes and non-athletes to compare the prevalence rates of alcohol behaviors, smoking and smokeless

tobacco use, and disordered eating behaviors and body image dissatisfaction. We hypothesized that there would be an interaction between gender and athletic status (athlete v. non-athlete) for all variables, with alcohol consumption patterns and smokeless tobacco use being highest in male athletes and eating disordered behaviors and body image dissatisfaction being highest in female non-athletes.

Method

Participants

We surveyed 506 students at a large, Division I university in the Pacific Northwest: 206 female non-athletes, 106 male non-athletes, 106 female varsity athletes, and 88 male varsity athletes. Approximately 90% of participants were Caucasian, with an average age of 21.36 ($SD = 5.93$). Non-athlete participants were all students of Psychology 101 and received course credit for their participation in this study. This course is required for all majors, and thus assured a wide variety of majors and class levels would be represented. Athletes were surveyed in team meetings or practices to assure that we could get all students on the teams. The Institutional Review Board approved all procedures before the study began.

Materials

Alcohol consumption. Alcohol use was assessed with four items from Cooper, Russell, Skinner, and Windle (1992). In response to each question, participants were asked to indicate the frequency of drinking ($1 = \text{never/rarely}$, $2 = \text{once a month}$, $3 = \text{once a week}$, $4 = \text{2-3 times a week}$, $5 = \text{daily or almost daily}$), the frequency of drinking until intoxication, and how much they drink per drinking occasion on both an average weekday and an average weekend day (e.g., number of drinks, where one drink = 12 oz beer, 4 oz wine, 1 oz spirits).

Smoking. Participants were asked to indicate how many cigarettes on average they smoked per day and whether or not they have used smokeless tobacco in the last year. Questions were adopted from Pritchard and Wilson (2005).

Disordered eating and body image dissatisfaction. Eating disturbances were assessed using questions from the Eating Attitudes Test (EAT-26) related to a preoccupation with food, eating, and weight (Garner & Garfinkel, 1979, $\alpha = .93$). Twenty-six questions (e.g., "I am terrified about being overweight") were scored on a six-point likert scale ($1 = \text{never}$, $6 = \text{always}$). The EAT-26 uses three subscales, dieting, bulimia, and oral control, which comprise the total score for the test. The EAT-26 uses a cutoff score of 20 to determine if a person is at risk for a clinical eating disorder. Thus in our study in addition to using raw scores on the EAT-26, we classified students as at risk or not at risk for an eating disorder based on their cutoff score. The EAT-26 is used in this study because of its wide use and accuracy in self-reported testing for non-clinical populations (Mintz & O'Halloran, 2000).

Body image was assessed using the Body Shape Questionnaire (Cooper, Taylor, Cooper, & Fairburn, 1987; see survey authors for discussion on validity and reliability) which contained various questions on how participants feel about certain aspects of their body (e.g., Have you

pinched areas of your body to see how much fat there is?). Responses were rated on a 6-point scale ($1 = \text{never}$, $6 = \text{always}$), with higher scores indicating greater body dissatisfaction ($\alpha = .90$).

Finally, students were asked about their dieting habits, including whether they had tried to gain weight or lose weight over the last year, and whether they were satisfied with their eating habits.

Results

Alcohol Consumption

Students were asked to report the average quantity of alcohol they drank on an average weekday, as well as on an average weekend day. In addition, students were asked to report the frequency of drinking and frequency of intoxication. A 2 (gender) x 2 (athlete v. non-athlete) ANOVA revealed that quantity of alcohol consumed on an average weekday was greater in males than in females, $F(1, 481) = 9.36, p < .01$, as well as in non-athletes than in athletes, $F(1, 481) = 19.13, p < .001$. In addition, there was an interaction between gender and athletic status on quantity of alcohol consumed during the average weekday, $F(1, 481) = 6.23, p < .05$, with female athletes drinking the least and male non-athletes drinking the most (see Table 1). We next examined the effect of gender and athletic status on average quantity consumed on a weekend day. A 2 x 2 ANOVA revealed that quantity of alcohol consumed on an average weekend day was greater in males than in females, $F(1, 479) = 9.36, p < .001$, but there was no effect of athletic status, $F(1, 479) = .67$ or any interaction between gender and athletic status on the average quantity of alcohol consumed on the average weekend day, $F(1, 479) = .07$. An examination of frequency of drinking during an average week revealed that non-athletes drank more frequently than did athletes, $F(1, 493) = 41.88, p < .001$, but there was no effect of gender, $F(1, 493) = 1.83$, or an interaction between gender and athletic status on frequency of drinking, $F(1, 493) = 0.01$. Finally, males drank to intoxication more often than did females, $F(1, 493) = 4.26, p < .05$, and non-athletes drank to intoxication more often than did athletes, $F(1, 493) = 77.92, p < .001$, but there was no effect of the interaction of gender and athletic status on frequency of intoxication, $F(1, 493) = .31$.

Table 1. *Means and Standard Deviations of Alcohol Consumption Patterns in Undergraduates by Gender and Athletic Status*

| | FNA | FA | MNA | MA |
|----------------------------|-------------|---------------|-------------|-------------|
| Quantity Weekday | .95 (1.71) | .58 (1.36) | 2.06 (3.27) | .68 (1.39) |
| Quantity Weekend Day | 2.31 (3.11) | 2.12 (2.30) | 3.92 (4.67) | 3.54 (4.49) |
| Frequency Drinking | 1.00 (1.13) | 1.66 (.88) | 1.13 (1.21) | 1.79 (.99) |
| Frequency Intoxication | .53 (.87) | 1.29 (.71) | .74 (1.00) | 1.42 (.79) |
| Cigarettes per Day | 1.84 (5.02) | .01 (.10) | 2.08 (6.12) | 0.00 (0.00) |
| Body Image Dissatisfaction | 3.05 (1.00) | 3.07 (.99) | 2.09 (.80) | 1.86 (1.02) |
| Disordered Eating | 9.63 (9.47) | 20.07 (19.65) | 4.38 (4.07) | 7.58 (7.38) |

Smoking

Students were asked to report the number of cigarettes they smoked on an average day and whether they used smokeless tobacco. A 2 (gender) x 2 (athlete v. non-athlete) ANOVA revealed that non-athletes smoked a greater number of cigarettes per day than did athletes, $F(1, 502) = 24.04, p < .001$, but that there was no effect of gender, $F(1, 502) = .09$, or an interaction between gender and athletic status on number of cigarettes smoked per day, $F(1, 502) = .11$ (see Table 1). Because use of spit tobacco was a nominal variable, we used a 2 (gender) x 2 (athlete v. non-athlete) x 2 (used spit tobacco v. did not use spit tobacco) X^2 . Males were more likely to use spit tobacco than were females for both athletes, $X^2(1, N = 186) = 24.68, p < .001$, as well as non-athletes $X^2(1, N = 311) = 9.33, p < .01$ (Number of spit tobacco users: FA=2, FNA=7, MA=22, MNA=13). For females, there was no difference in spit tobacco use between athletes and non-athletes, $X^2(1, N=309) = .52$, but for males, athletes proportionally used more spit tobacco than did non-athletes, $X^2(1, N = 188) = 6.10, p < .05$.

Disordered Eating and Body Image Dissatisfaction

Students were asked to report their level of body dissatisfaction, as well as disordered eating habits. A 2 (gender) x 2 (athlete v. non-athlete) ANOVA revealed that women reported greater body dissatisfaction than did men, $F(1, 501) = 142.66, p < .001$, but that there was no effect of athletic status, $F(1, 501) = 1.41$, or an interaction between gender and athletic status on body image dissatisfaction, $F(1, 501) = 1.88$ (see Table 1). There was also an effect of gender on disordered eating, with women displaying more disordered eating than did men, $F(1, 501) = 68.92, p < .001$. In addition, athletes displayed more disordered eating than did non-athletes, $F(1, 501) = 40.78, p < .001$, and there was an interaction between gender and athletic status on disordered eating behavior, $F(1, 501) = 11.48, p < .001$. Whereas all athletes displayed more

disordered eating than did non-athletes, the gap was much greater between female athletes and non-athletes than between male athletes and non-athletes.

In addition to examining differences in the overall scores, we also classified students as eating disordered or not eating disordered based on the established cutoff score for the EAT-26. For females, 13% of non-athletes had eating disorders, whereas 36% of athletes had eating disorders, resulting in a significant difference, $X^2(1, N = 312) = 21.95, p < .001$. For males, 1% of non-athletes had an eating disorder, whereas 9% of athletes had an eating disorder, $X^2(1, N=194) = 7.22, p < .01$.

Discussion

The purpose of this study was to examine the influence of gender and athletic status on alcohol consumption patterns, use of cigarettes and smokeless tobacco, and disordered eating and body image dissatisfaction. We hypothesized that there would be an interaction between gender and athletic status (athlete v. non-athlete) for all variables, with alcohol consumption patterns and smokeless tobacco use being highest in male athletes and dieting and eating disordered behaviors being highest in female non-athletes. As will be discussed below, some of our findings were consistent with our predictions and with the literature, and some were not.

Alcohol Consumption

Similar to previous studies (Capraro, 2000; Werner et al., 1994), we found that males drank greater quantities of alcohol both during the week and on the weekend than did females and males drank to intoxication more often than did females, but unlike previous research we found no gender differences in frequency of alcohol consumption. Thus, it appears that in recent years, females have increased their frequency of alcohol consumption, but not the quantity of alcohol consumed per drinking occasion. This may have to do with the recent increase in the use of alcohol as a coping mechanism among college students, especially females (Wilson, Pritchard, & Schaefer, 2004). Researchers have found that young adults view drinking with peers as an appropriate coping mechanism in response to stress, boredom, loneliness, and lack of other recreational activities (Ames, Baraban, Cunradi, & Moore, 2004).

Contrary to most previous research (Leichliter et al., 1998; Nattiv et al., 1997; Wechler & Davenport, 1997), the differences in alcohol consumption patterns between athletes and non-athletes indicated that greater quantities of alcohol were being consumed on an average weekday by non-athletes than by athletes, but no differences in the quantity of alcohol consumed on an average weekend day. This may be due to the fact that most athletes have practice during weekday afternoons and evenings and thus do not have time to drink or may not wish to “mess up” their performance during practice. Non-athletes also drank more frequently and to intoxication more frequently than did athletes. This is similar to the findings of Koss and Gaines (1993). It is unclear why so many studies have indicated conflicting evidence regarding the influence of athletic status on alcohol consumption patterns – it may have to do with whether athletes are in season or out of season or the type of team (e.g., Division I) or type of school or school size. Future studies should investigate the impact of such factors on alcohol consumption

patterns.

Most importantly, we examined the effect of the interaction between gender and athletic status on alcohol consumption patterns. We found an interaction between gender and athletic status on quantity of alcohol consumed during the average weekday, with female athletes drinking the least and male non-athletes drinking the most. This confirms the findings of Koss and Gines (1993). However, there was no interaction between gender and athletic status on the average quantity of alcohol consumed on the average weekend day, frequency of drinking, or frequency of intoxication. This was surprising and contrary to our hypothesis. This again may have something to do with the fact that we tested athletes who were in season and thus may have been drinking less, thus matching the patterns of non-athlete alcohol consumption.

Smoking

Similar to previous studies (Rigotti et al., 2002; Wechsler & Davenport, 1997), we found that non-athletes smoked a greater number of cigarettes per day than did athletes. However, similar to Wechsler and Davenport (1997) there appeared to be an interaction between gender and athletic status on spit tobacco use, with no difference in spit tobacco use between female athletes and non-athletes, but male athletes proportionally used more spit tobacco than did male non-athletes.

Disordered Eating and Body Image Dissatisfaction

Similar to previous research (Hausenblas & McNally, 2004), women in our study reported greater body dissatisfaction and disordered eating than did men. Although there was no effect of athletic status on body image dissatisfaction, similar to Kirk et al. (2001), athletes displayed more disordered eating than did non-athletes. Most importantly, in line with our hypothesis we found an interaction between gender and athletic status on body image dissatisfaction as well as disordered eating behavior. For body image dissatisfaction, female athletes displayed more dissatisfaction than did female non-athletes, but male non-athletes displayed more dissatisfaction than did male athletes. For disordered eating, whereas all athletes displayed more disordered eating than did non-athletes, the gap was much greater between female athletes and non-athletes than between male athletes and non-athletes.

Limitations

Although our study attempted to shed light on conflicting results in previous research concerning the prevalence rates of alcohol behaviors, smoking and smokeless tobacco use, and disordered eating behaviors and body image dissatisfaction in college students, several limitations to the present study should be noted. First, nearly all of our participants were Caucasian. Future studies should examine the influence of gender and athletic status on health behaviors in a more diverse population of college students. Second, all of our participants were recruited from an introductory level Psychology course. Although this course is required for all majors, there may be differences between students in this course and other college courses. Third, our study was conducted at a state university in the Pacific Northwest. Results may be different in other regions of the country or in private or religious universities. Fourth, all of our data was self-report data. Students may not be honest about their behaviors – either underreporting or overreporting certain

behaviors. Future researchers may wish to use other types of data collection, such as individual interviews, interviews with athletic teams or peers, etc. to shed more light on this topic.

Conclusion

In sum, health risk behaviors, such as alcohol consumption patterns, tobacco use, and body image dissatisfaction and eating disorders do appear to differ by both gender and athletic status. However, the patterns are not consistent, with athletes being more vulnerable for certain risky behaviors and non-athletes being more vulnerable for others. Furthermore, these patterns also differ by gender, adding yet another variable into the equation.

Recommendations for Practice

When designing treatment and prevention programs for health risk behaviors in college students, college administrators need to be aware of the different vulnerabilities that various populations face and be prepared to address different issues and treatment plans for different populations. In addition, for student athletes, coaches and trainers need to be aware of the unhealthy behaviors practiced by their athletes and develop prevention programs to help cope with these unhealthy behaviors. For example, coaches may wish to bring in a health or sports psychologist to discuss body image with their female athletes. Regardless of a student's gender or athletic status, college administrators need to make sure that students have the resources they need to maintain healthy, happy college careers.

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