

USE OF SOCIAL ECOLOGY MODEL TO ADDRESS ALCOHOL USE AMONG COLLEGE ATHLETES

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Abstract: Compared to non-athletes, college athletes consume more alcohol and report higher rates of alcohol-related consequences such as DUI, unsafe sexual practices, and criminal behavior. This poses major problems for the integrity of college athletics, athletic department personnel, and health educators who work to reduce destructive alcohol behaviors on campus. To understand why current alcohol education is ineffective, it is necessary to examine the ecology of this behavior. This article examines alcohol use among college athletes using the Social Ecology Model to determine what most influences this behavior. A proposed ecological model specific to alcohol use among college athletes is discussed.

“Probably 85 to 90 percent of the negative incidents on campus, whether dealing with players or other students, were in some way related to alcohol... We have justifiable anxiety over 1,500 (American) deaths in Iraq of a two-year period, but alcohol kills 1,400 college students annually”—Tom Osborne interview, as made to Joan Ryan, reporter for the San Francisco Chronicle, March 17, 2005.

Tom Osborne is a former University of Nebraska head football coach and now Republican Congressman representing Nebraska in the U.S. House of Representatives. According to Osborne, in his 36 years as a coach of the Cornhuskers, he dealt with only three students who abused steroids and thousands who abused alcohol (Ryan, 2005). Glance at recent collegiate athletic news and instead of scores and highlights, one notices headlines regarding arrests, team suspensions, and campus crimes committed by student athletes. While people may dismiss these incidents as youthful indiscretions, universities take very seriously the major responsibility to promote positive behaviors and safe environments among its student athletes, as well as non-athletes. The question becomes why are there so many negative occurrences on campuses, and why are so many committed by college athletes? With highly publi-

cized Congressional hearings centered on steroid use as the primary substance abuse problem in sports, it is easy to forget that alcohol, not performance enhancers, contributes to more social and health problems among athletes than any other drug (Leichtner Meilman, Presley, & Cashin, 1998; Naughton, 1996). Although the use of performance enhancing substances does increase health risks and prevention programs are needed, health educators and higher education administrators cannot overlook the problem of alcohol misuse among university athletes. Alcohol consumption and misuse is a major part of athletic life at colleges across the United States.

From 1970-2005, at least one college athlete has suffered an alcohol-related death every year (Nuwar, 2000). Alcohol is not new to college campuses or college athletics; however, recent media headlines have raised questions about the culture of college athletics and its relationship to alcohol. Among the many alcohol-related incidences: Duke University Men's Lacrosse—Season cancelled and coach resigns after alcohol-fueled party on March 13, 2006 results in sexual assault and kidnapping charges against three players (“Duke Lacrosse,” 2006).

- California State University at Chico cancels 2006 softball season after a 17 year old recruit

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entered the hospital for alcohol overdose. Several current players were in attendance and also under the legal drinking age ("Recruit Went to Hospital," 2006).

- Hartwick College, in Oneonta, NY, suspends several players for the 2006 lacrosse season after hazing incident where freshmen players were forced to strip and drink a keg of beer (Palmateer, 2006).

- UCLA football player Justin Medlock charged with felony driving under the influence after a December 10, 2005 automobile accident in which fellow athlete Hannah Jun was seriously injured ("UCLA Placekicker," 2005).

ALCOHOL USE AMONG COLLEGE ATHLETES

Over the past several decades, studies have consistently shown that athletes exhibit high rates of alcohol use and alcohol-related consequences. A 2001 study by the National Collegiate Athletic Association (NCAA) revealed that 78.3% of college athletes had used alcohol within the previous year, while a similar study by Green, Uryasz, Petr, and Bray (2001) reported that 80.5% of student athletes surveyed consumed alcohol in that time period. Multiple studies showed that university student athletes report higher use and misuse of alcohol than comparable non-athletes (Hildebrand, Johnson, & Bogle, 2001; Leichliter, et al., 1998; Nelson & Wechsler, 2001; Wechsler, Davenport, Dowdall, Grossman, & Zanakos, 1997). Hildebrand et al. revealed that college athletes (28.5%) show significantly higher levels of heavy drinking than comparable non-athletes (13.8%). Leichliter et al. reported that college athletic team members average 50% more drinks per week (9.66) than student non-athletes (6.37). Additionally, student athletes experience more alcohol-related consequences such as driving under the influence, unsafe sexual practices, and institutional offenses (Leichliter et al.). Despite these statistics, current educational efforts have done little to change or modify the behaviors of these athletes.

Although the NCAA has begun to review external alcohol policies, including advertising, little has been done to review policies governing athlete behavior (Hedlund, 2005). The minimal guidelines for alcohol education set forth by the NCAA states that individual institutions must deliver an education program at least once a semester for athletes (NCAA Minimum, n.d.). However, it is evident that simple education, although important, cannot alone change behavior (Wechsler, Nelson, & Weitzman, 2000). Researchers have suggested that there are too many other factors that strongly influence whether an athlete will consume alcohol or binge drink (Harvard Alcohol, n.d.). Realizing that multiple

influences affect behavior, a systematic review of all levels of influence is necessary to determine effective change. This article suggests the adoption of a broad, multi-level approach for health educators, college administrators, and athletic department personnel in dealing with the increasingly visible and socially unacceptable problem of college athletes' alcohol behaviors.

LITERATURE REVIEW

It comes as no surprise that college athletes use alcohol for multiple reasons. A historical perspective on this issue gives some insight into how the behavior was originally viewed. One initial notion was that the physical nature of athletics was influential against use. Given that athletic performance puts a premium on the physical conditioning of athletes, it was originally thought that student athletes are at a lower risk for alcohol abuse (Strauss & Bacon, 1953). It was suggested that athletes would avoid alcohol use in an effort to maintain optimal conditioning. However, as noted, student athletes show greater levels of alcohol consumption and alcohol misuse. In 1997, Wechsler et al. reported that student athletes (61%) were more likely to have engaged in binge drinking in the previous 2 weeks than students not involved with athletics (43%). In the study, binge drinking was defined as five or more drinks in a row for males or four or more drinks in a row for females. In 2004, the National Institute of Alcohol Abuse and Alcoholism (NIAAA) officially defined binge drinking as consuming five or more drinks for males or four or more drinks for females in about 2 hours. Wechsler et al. also discovered gender differences. More male athletes (29%) reported binge drinking than female athletes (24%), which is comparable to rates within the general student population in the United States. In 2006, the NCAA reported that the number of athletes drinking five or more drinks in one sitting increased dramatically since 2001 (NCAA, 2006).

In a study of 51,483 college students who participated in the Core Alcohol and Drug Survey in the mid-1990s, Leichliter et al. (1998) revealed a similar outcome. Alcohol consumption was greater in athletes than in non-athletes, particularly in areas such as average number of drinks per week and binge drinking in the previous 2 weeks. In response, the NIAAA has identified athletes as an at-risk college sub-population (NIAAA, 2002). An examination of the social culture of college athletes, with focus on alcohol influences, will assist researchers in determining the best practices for reducing alcohol-related problems in this high-risk population.

Additional research on alcohol use by athletes has looked at several factors that influence drinking behaviors such as social atmosphere, team roles,

alcohol perceptions, and consequences of use. To a degree, alcohol is ingrained within sport culture. Dating back centuries, alcohol has been used as a training supplement, similar to the athletic drinks seen today. Social use among athletes and sports fans has been documented, as well as alcohol's primary role in sport marketing (Collins & Vamplew, 2002; Stainback, 1997). Given this cultural link, it is possible that alcohol acceptance has been institutionalized into sports. This conception is glorified through popular media such as Sports Illustrated on Campus' ranking of the best college sports bars and best college football weekends, of which alcohol is a large part (Big Shots, 2005 & Waxman, 2005).

College student alcohol use and its association to the social atmosphere on campuses have been widely researched. Several studies have examined the role of social drinking norms on campus and its effect on personal alcohol use (Martens, Page, Mowry, Damann, Taylor, & Cimini, 2006; Perkins, 2002; Perkins, Haines, & Rice, 2005; Perkins & Wechsler, 1996; Thombs, 2000; Thombs & Hamilton, 2002). Thombs indicated that college athletes overestimate the normal drinking rates on campus and among teammates, which may lead to increased personal use. Many athletes use alcohol as a social drug, thereby suggesting influence to use may be peer related. Leichliter et al. (1998) found that athletes considered team leaders drink more and experience more negative consequences than non-team leaders.

Negative consequences of alcohol use among college students have been examined and identified. It is suggested that college athletes experience negative outcomes of alcohol use to a greater degree than non-athletes (Leichliter et al., 1998; Naughton, 1996). These outcomes include driving under the influence, higher rates of sex-related crimes, and increased risk for sexually transmitted diseases. In addition to these health outcomes, athletes also risk loss of scholarship and public scrutiny because of their visible role within college communities, which has secondary effects on the image of the university as well. As a result, some major universities have banned or increased restrictions on alcohol use during tailgating on campus, including Kansas State University and Yale University which has limited tailgating during its annual football rivalry game against Harvard University (Gameday Policies, 2004; "Yale to Limit," 2005).

Several crucial areas have been identified to explore the problem of college over-drinking (Hildebrand et al., 2001; Leichliter et al., 1998; Nelson & Wechsler, 2001; Thombs, 2000; Wechsler et al., 1997; Wilson, Pritchard, & Schaffer, 2004). Further research on drinking motives and alcohol influences is suggested (Leichliter et al.; Wilson et al.). Athletic coaches are influential over athletes;

therefore the role of coaches in alcohol use prevention and intervention has been listed as an area for continued study (Hildebrand et al.; Wechsler et al.). Research is needed to investigate the function of the athletic department, school, and community in alcohol use prevention and intervention among athletes (Hildebrand et al.; Nelson & Wechsler; Thombs). It has also been indicated that variables such as team leadership role (Leichliter et al.) and type of sport (Leichliter et al.; Thombs; Wechsler et al.) may impact drinking behavior.

As drinking rates remain high, it is evident that previous singular-focused alcohol educational interventions have yielded little or no change in alcohol usage rates and related-consequences among college athletes. Similarly, research into alcohol policy changes has shown little positive change (Weitzman, Folkman, Folkman, & Wechsler, 2003). A broad, multi-level approach addressing the social ecological aspects of alcohol use in college athletics may allow for identification and intervention among varying levels of influence. McLeroy (2006) suggests using social ecology as a conceptual framework for changing social systems to accomplish goals of health promotion.

SOCIAL ECOLOGY MODEL

While simple observation of behavior is important in health promotion, employing a more comprehensive approach is required for initial and sustainable change. Various theories have been proposed to assist in the explanation of why people behave in the manner that they do. Social Ecology is a comprehensive approach to behavior explanation. Ecology suggests that behavior is affected by multiple levels of influence (McLeroy, Bibeau, Steckler, & Glanz, 1988). Alcohol use among college athletes is a multifaceted behavior in which influence is drawn from various sources; therefore an ecological approach of examining the problem may be the most appropriate method to make significant, sustainable behavioral change.

The ecological perspective and its varying levels of influence were explained in 1988 by McLeroy and colleagues. The key concept in this perspective is that behavior is multifaceted, with social and environmental issues being important contributing factors. Based on earlier work which suggested that behavior affects and is affected by various levels of influence, McLeroy and colleagues outlined an ecological model that includes five factors that affect health and corresponding behaviors. This model included: *intrapersonal factors, interpersonal processes, institutional or organizational factors, community factors, and public policy*. The authors noted that assumptions of health promotion interventions are based on behavior theories and beliefs; therefore this model and its five lev-

Figure 1. Five Levels of Social Ecological Influence on Behavior (McLeroy et al., 1988)

Intrapersonal Factors	Characteristics include personal knowledge, attitudes, and beliefs concerning particular behaviors; Issues of personal skill and self-concept
Interpersonal Factors	Social networks including family, friends, and work groups
Organizational/Institutional Factors	Social practices with organizational characteristics including the formal and informal rules and regulations for operation within the particular institution; Organizational norms and changes of those norms can affect behavior of those individuals involved
Community Factors	Relationships among organizations, institutions, and informal networks within defined boundaries; Includes the social standards or norms that exist within the community
Policy Factors	Policies and laws that are designed to protect the health of a community; Policies for health protection include regulations for healthy actions, disease prevention, and disease control

els of analysis signify the array of strategies available for health promotion programming (Figure 1).

Social ecology theory has been suggested for use in college alcohol prevention (Hansen, 1997; Perkins & Berkowitz, 1986). Hansen suggests a social ecological approach to establish the relationship of social structure and alcohol use among college students. Hansen also identifies college athletic teams as a social influencing factor on personal alcohol use. The authors of this paper have examined the ecology of alcohol use among college athletes to broaden the scope of potential research and intervention strategies.

ECOLOGY OF ALCOHOL USE AMONG COLLEGE ATHLETES

The environment and identity of a college student athlete differs from that of a non-athlete in several ways. Social structure, time management, and sport-performance pressures are usually quite different for those who are college athletes. Because of the various influencing factors in a college athlete's life, it is acceptable to presume that those factors can directly influence behavior. Hansen (1997) suggested a Social Ecology Theory for college alcohol prevention in which college athletic teams are identified as a social influencing factor on personal alcohol use. In an effort to fully explore the culture within which a student athlete uses alcohol, one needs a framework

that explores various levels of personal, social, and environmental influences. Viewing the problem of alcohol consumption through an ecological perspective allows for understanding of the systems in which athletes make this health behavior choice and determination of the factors that may affect behavior. The Social Ecology Model's five levels of behavioral influence can be used to determine primary influencing factors specific to college athletes' alcohol use. Although some of these factors may also affect the non-athlete, it is necessary to develop criteria specific to college athletes.

INTRAPERSONAL FACTORS

Intrapersonal factors include individual characteristics such as knowledge, attitudes, and beliefs that may affect behavior. For the college student athlete, it is important to assess knowledge regarding alcohol's relationship not only to general health, but also how alcohol can affect sport performance. According to the NCAA (2006), almost 60 percent of college athletes believe their personal alcohol use has no impact on their health or sport performance, while almost 30 percent stated that they have performed poorly in a game or practice because of alcohol use. Since sport performance may affect academics through scholarship retention and vice versa, athletes must be aware of the compromise from alcohol consumption.

One unique aspect of being an athlete is the athletic identity. The process of becoming an athlete involves learning the norms of the sport and earning

acceptance as a member of the sport (Donnelly & Young, 1988). An athlete will often look to other athletes for role confirmation or behavioral cues. This adaptation to the sport lifestyle is sometimes referred to as the athletic identity (Anderson, 2004; Brewer, Van Raalte, & Linder, 1993). Applying interactionist theory (Burke, 1980) to sports, the athletic identity is expressed by how one defines himself or herself as an athlete and is defined by others as an athlete (Coakley, 2001). The interaction between others and the belief in an athletic identity may have an influence on behavior, particularly alcohol consumption. Research is needed to determine college athletes' perception of how they are identified and how they identify themselves. Also necessary is research into how this identification relates to the decision to drink or abstain from alcohol.

INTERPERSONAL FACTORS

Interpersonal factors are extremely influential to the behavior of college student athletes. An analysis of college drinking studies from 1953 to 1984 revealed that students who were involved in college social activities drank more alcohol and more frequently than students who were less involved in social activities (Brennan, Walfish, & AuBuchon, 1986). More recent studies show a similar pattern among Greek organizations and college athletics (Cashin, Presley, & Meilman, 1998; Leichliter et al., 1998; Meilman, Leichliter, & Presley, 1999). This suggests that social groups are influential in alcohol behavior. The effects of peer norms and normative beliefs have also been shown through prior research. Perkins, Haines, and Rice (2005) analyzed a large national database to determine the extent of alcohol misperceptions by college students. It was found that nearly 75% of college students nationwide overestimate the amount of alcohol consumed by peers in social situations. A student's perception of drinking norms on campus is one of the strongest predictors of personal alcohol consumption (Perkins et al.; Perkins and Wechsler, 1996). Since many athletes live in a social network that is dominated by teammates, it is important to determine the perceptions and beliefs of these norms within the team framework. A social group, such as a sports team, encourages social bonds between members which may lead to behavior imitation; therefore research into perceptions of teammates' alcohol patterns may be very beneficial in developing proper interventions (Cashin et al.). It would also be advantageous to examine the role of team leadership, since Leichliter et al. (1998) revealed that leaders report higher consumption.

ORGANIZATIONAL OR INSTITUTIONAL FACTORS

Organizational or institutional influences on

athletes may come from the organized leaders of a team. Viewing the team as an organization itself, athletes' perception of the coaches' rules, beliefs, and attitudes regarding alcohol use must be examined. Bower and Martin (1999) suggested that coaches' rules about alcohol can affect players' consumption, therefore the organizational rules within the team must be considered. Perceptions that coaches will not tolerate alcohol use by players may lead to restricted consumption on the part of the athlete (Bower & Martin).

COMMUNITY FACTORS

In college, the predominant community in which students live is the university campus. As in most communities, college campuses provide interaction between various social groups creating a network of different clubs, organizations, and teams. Because athletes are not confined to relationships with other athletes, it is necessary to study the beliefs and perceptions that athletes have about alcohol use among the general student population. This is based on Thombs' (2000) report that athletes overestimate the amount of alcohol that non-athletes consume.

POLICY FACTORS

Campus alcohol policies are instrumental in setting guidelines and management of alcohol-related behaviors among students. Hirschfeld, Edwardson, and McGovern (2005) conducted a systematic review to examine aspects of college alcohol policies. It was determined that the college alcohol policies reviewed were moderately clear and accessible, but the areas of enforcement and comprehensiveness were lacking. Without proper enforcement, policy does little to impact behavior. In addition to university-wide policies, college athletes also fall under the governing regulations of an athletic department. According to the American Football Coaches Association (2003), 88% of the athletes surveyed believed that their university is making a serious attempt to inform them about the hazards of using drugs and alcohol. In spite of the perceived education efforts, many athletes will continue to misuse alcohol. As Thombs (2000) indicated, little is known about athletic departments' commitment to alcohol education; therefore, policy factors should be studied to determine how the athletes perceive the university and athletic departments' rules, regulations, and policies regarding alcohol use. It should be determined if athletes are aware of the regulations and the consequences of violation. Perceptions of these rules and of the severity of the consequences may affect consumption. Using the review model set forth by Hirschfeld, Edwardson, and McGovern, it would be advantageous to examine athletic department alcohol policies on the basis of accessibility, clarity, comprehensiveness, and enforcement.

IMPLICATIONS FOR APPLICATION OF SOCIAL ECOLOGY MODEL TO COLLEGE ATHLETES' ALCOHOL USE

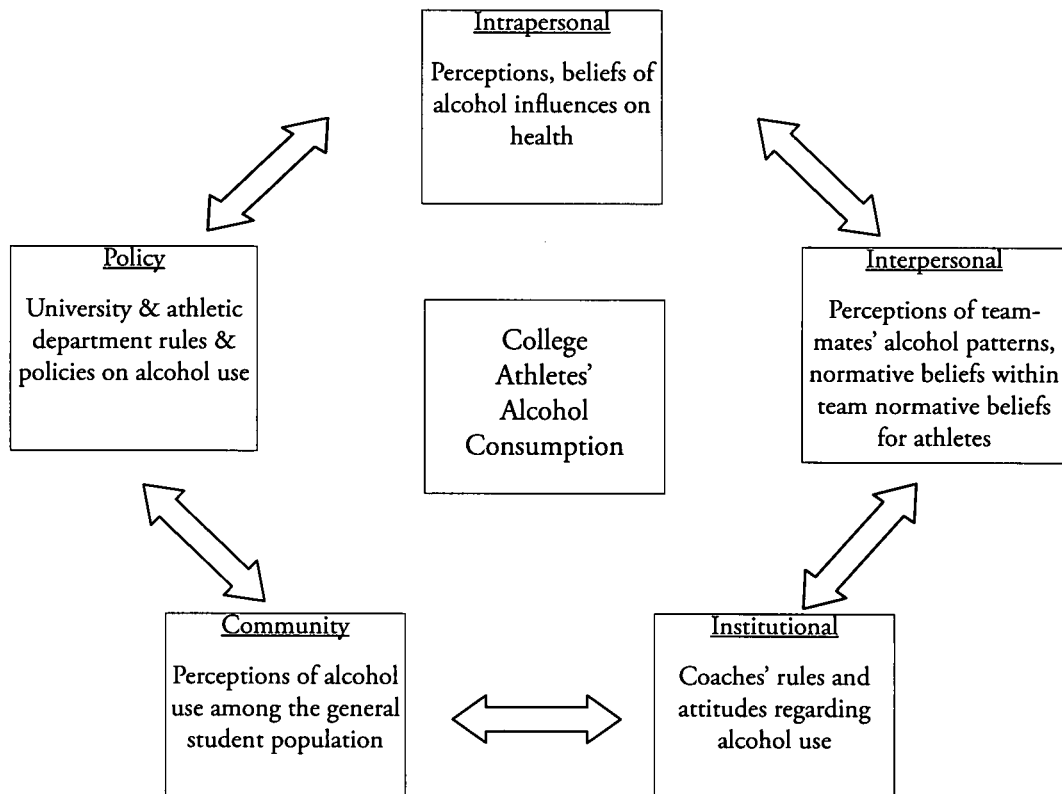
College sports expose participating athletes to increased pressures in both athletic and academic areas. It can also be said that the social life of college athletes may differ from that of non-athlete students. For these reasons, it is important to develop specific and appropriate alcohol awareness campaigns to help decrease the problems seen in this population. The U.S. Department of Education (2002) suggests social norms marketing and environmental change through alcohol policies modification, such as restricting alcohol advertising and marketing and creating and enforcing campus-wide policies that limit team participation for alcohol use. Studies have shown that interventions containing social norm components have helped reduce alcohol consumption by college students (Barnett, Far, Mauss, & Miller, 1996; Borsari & Carey, 2000; Gomberg Schneider, & DeJong, 2001; Haines & Spear, 1996). However, there is evidence that social norm campaigns alone, do not impact student-athletes' alcohol consumption (Thombs & Hamilton, 2002). This

provides support for the need of a social ecological solution to the problem. A multi-level, ecological approach which incorporates social norms marketing at the interpersonal and community levels, personal health education at the intrapersonal level and university/athletic department guideline changes at the policy and institutional levels may be advantageous.

It is suggested that the problem be addressed through the multiple levels outlined in Figure 2. Intervention development must take into account several aspects such as the role of team members, motives of alcohol use, peer normative beliefs, social factors, and negative consequences. Perhaps to achieve the greatest impact, interventions should begin prior to college (high or junior high school) since previous alcohol consumption is a strong predictor of future alcohol use and misuse (Wechsler, Lee, Kuo, & Lee, 2000). Although over 90% of elementary and secondary schools report teaching on the benefits of not using alcohol, this alone doesn't appear to make significant impact since the prevalence of alcohol use remains high (Kann, Brener, & Allensworth, 2001). Since elementary and secondary school prevention efforts do not seem effective, it is imperative to de-

Figure 2. Application of the Social Ecology Model to College Athletes' Alcohol Use

Social Ecology Model for Alcohol Use Among College Athletes



velop suitable programs to help decrease the negative outcomes of alcohol use while in college. In order to develop and implement appropriate and effective interventions, needs assessment must take into account all factors that influence student athletes' alcohol consumption. Ecological models integrate key influencing factors across disciplines; therefore, an ecological approach to college athlete alcohol prevention and intervention is essential. Figure 2 contains explanations of the social ecological levels of influence as they directly relate to college athletes' alcohol use.

CONCLUSIONS AND IMPLICATIONS

The NIAAA suggests five steps for effective program planning and intervention with college alcohol problems: identifying specific goals and objectives, reviewing the evaluation research, outlining how the intervention will work, creating and executing a data collection plan, and providing feedback to the intervention program (Saltz & DeJong 2002). A framework of social ecology is also highly recommended as it allows for a broader approach to understanding the behavior on campus. This approach can also be applied to the subpopulation of college athletes.

Utilizing the *Social Ecology Model for Alcohol Use Among College Athletes* to fully examine the reasons for alcohol use is an important step to address alcohol abuse on campuses. As research and recent headlines

have revealed, it is not only the athletes at risk. Reducing alcohol-related problems among athletes on campus extends benefits to all students, athlete and non-athlete alike, as well as the surrounding communities. University health educators should collaborate with athletic department staff and university administrators to address alcohol use among college athletes using the broad, multi-level approach of social ecology. University administration must provide support for any campus initiative to prove successful. University wide policy mandating athlete-specific educational programs and policies may help shape the drinking atmosphere among student-athletes. Since athletic department staff, including administration and coaches, have direct authority over college athletes, they must take a lead role within interventions. This includes creating and enforcing year-long team and department policies regarding alcohol use and misuse. As suggested by the U.S. Department of Education (2002), the enforcement of these policies should include limiting sport participation. Health educators are charged with the planning, implementing, and evaluating of alcohol interventions for college athletes. Also important for health educators, is to act as a resource for athletic department personnel. It is suggested that this collaboration use the ecological model set forth in the paper to guide intervention development. Figure 3 contains suggested examples of prevention or intervention programs for each ecological level.

Figure 3. Suggestions for Prevention/Interventions Targeting College Athletes' Alcohol Use and How University Officials Should Be Involved

Intrapersonal	Educational campaign on the personal health effects of alcohol use; education on how changes in health affect changes in sport performance
Interpersonal Factors	Educational campaign focusing on social norms among college athletes; targeting misperceptions and overestimation of normal drinking patterns of athletes and teammates
Organizational/Institutional Factors	Development of team-specific rules by coaches regarding alcohol limitations
Community Factors	Educational campaign focusing on social norms among college students; targeting misperceptions and overestimation of normal drinking patterns of college students in general and students on the particular campus
Policy Factors	Development of clear, accessible, enforceable university and athletic department policies that limit sport participation if alcohol rules are not followed

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RESPONSIBILITIES AND COMPETENCIES OF HEALTH EDUCATION

Responsibility I – Assessing Individual and Community Needs for Health Education

Competency B: Distinguish between behaviors that foster and those that hinder well-being

Sub-competencies:

1. Investigate physical, social, emotional, and intellectual factors influencing health behavior
2. Identify behaviors that tend to promote or compromise health
3. Recognize the role of learning and affective experiences in shaping patterns of health behavior
4. Analyze social, cultural, economic, and political factors that influence health

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