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COLLEGE ATHLETES AND ALCOHOL USE:  
THE NEED FOR EFFECTIVE PREVENTION/INTERVENTION  
PROGRAMS

By  
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Professional Paper  
presented in partial fulfillment of the requirements for the degree of  
Master of Science in Health and Human Performance

The University of Montana  
Missoula, MT  
May 2020

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**Abstract**

Craig, Paige, Master of Science, Spring 2020

Health and Human Performance

College Athletes and Alcohol Use: The Need for Effective Prevention/Intervention Programs

Chairperson: Charles Palmer

The literature review investigates the relationship between alcohol and college athletes. College athletes are a high-risk drinking group; alcohol use amongst collegiate athletes is a major concern due to the consequences associated with use. It is important to review student-athlete behavior and influences that contribute to alcohol use in order to design a program that effectively prevents use and intervenes use when it occurs. Results from original articles were used to support the need for effective prevention/intervention programs for this population based on the severity and frequency of use, negative effects of alcohol, and lack of effective prevention/intervention programs. Coaches, athletic personnel, and universities need to implement effective programs in order to promote student-athlete well-being and athletic success. This paper concludes with practical recommendations for coaches, athletic personnel, and universities to take into consideration when implementing an effective prevention/intervention program.

## Introduction

There are many health risks associated with alcohol use <sup>3</sup>, yet alcohol is still one of most used and abused drugs <sup>3,20</sup>. Unfortunately, athletes are no exception to this abuse. In fact, it is more common for athletes to use and abuse alcohol than to abstain. Alcohol is the most widely used drug among high school and collegiate athletes, and student-athletes are more likely to drink than non-athletes <sup>2</sup>. Alcohol use among collegiate athletes, specifically, is a major concern due to the variety of consequences associated with frequent use.

Both acute and chronic alcohol use has negative effects on an athlete's physical performance <sup>7,8,9,12,19</sup>. Furthermore, alcohol use can lead to unintentional injury, decrease quality of life, and can put a student-athlete's ability to compete at risk <sup>2,11,12</sup>.

The health and well-being of student-athletes should be a primary concern for coaches, athletic personnel, and universities. Coaches should be aware of the variety of consequences associated with alcohol use and the negative effect it has on athletes' performance and quality of life. They also need to be aware of the relationship between athletes and alcohol and understand that athletes are a high-risk drinking population <sup>5</sup>.

If athletes choose to abstain from alcohol use, both athletic performance and quality of life are likely to improve. Effective prevention and intervention practices need to be present in (collegiate) athletic programs in order to decrease the frequency of alcohol use by student-athletes. Implementing a prevention/intervention program may not only improve athletes' well-being and performance but will increase the likelihood of success among athletic programs.

### *Statement of Problem*

College athletes are a high-risk drinking population due to a variety of reasons and influences. College athletes are more likely to use alcohol than non-athletes. Despite the recognition of this issue, universities and athletic personnel make little attempt to resolve the issue or decrease rates of drinking. Frequent alcohol use can negatively impact athletic performance and quality of life. To avoid consequences of alcohol use, college athletes need effective prevention/intervention programs made available to them by their university or athletic department.

### *Purpose of Study*

The purpose of this study is to emphasize the need for an effective prevention and intervention program in college athletics based on the severity of alcohol use amongst college athletes. The study will determine what prevention and intervention programs are currently implemented in collegiate athletics in the United States, and whether those established programs effectively decrease alcohol use. Conclusions drawn from the literature review will guide future efforts for designing a successful prevention and intervention program for student-athletes.

### *Significance of Study*

Collegiate athletic departments' primary goal should be the promotion of student-athlete success while ensuring their health and safety. When college athletes use alcohol, they decrease their chances for success and put their health and safety at risk. By not providing prevention and intervention programs, universities and athletic departments neglect athletes' health and safety. When athletes abstain from alcohol, their athletic

performance improves and so does their quality of life. A secondary goal for athletic departments may be winning. Implementing an effective prevention and intervention program may influence athletes to abstain from alcohol, increasing the chances of winning and athletic/academic success.

### *Limitations of Literature*

One of the largest limitations of this literature review is the limited research on present prevention/intervention programs for collegiate athletes. This might be a result of the lack of evidence-supported alcohol abuse treatments that have been modified to fit the needs of this unique population. Research and evidence of prevention/intervention programs only provides studies related to programs associated with the NCAA. Additionally, few studies assess the effectiveness or success of prevention/intervention programs used by the NCAA.

### *Basic Assumptions*

A basic assumption is that it is reasonable to associate student-athlete behavior and alcohol use with the need for alcohol prevention/intervention programs. Most prior research focuses on athletes and their relationship with alcohol along with reasons to explain problematic alcohol use. Prior research does not recommend a prevention and intervention program based on the relationship or proposed reasons. Thus, in this review of literature, studies that determine the relationship between alcohol and athletes, risk factors, behaviors, influences, and problems associated with alcohol will be used to support the need for an effective prevention and intervention program.

### *Definitions of Terms*

**Acute:** referring to short durations of alcohol consumption or alcohol consumption that only occurs occasionally over an extended period of time

**Aerobic Exercise:** type of exercise associated with an increased rate of breathing and exercise that promotes circulation of oxygen through the blood

**Alcohol Abuse:** excessive consumption of alcoholic beverages, either on individual occasions or as a regular practice

**Alcohol Related Unintentional Injury (ARUI):** a physical impairment that results from poor behavior influenced by alcohol consumption

**Alcohol Use:** consumption of any number of alcoholic beverages by an individual

**Athletic Personnel:** formal leaders including strength and conditioning coaches, athletic trainers, team physicians, sport psychologists, and academic advisors. Or individuals in positions that work with and consult with athletes regularly

**Binge Drinking:** the consumption of an excessive amount of alcohol in a short period of time (4 or more drinks within 2 hours for women, 5 or more drinks within 2 hours for men)

**Central Nervous System (CNS):** two main organs of this system include the brain and spinal cord; it is the processing center that receives information from and sends information to the peripheral nervous system

**CHOICES:** Consortium for Health Outcomes, Innovation, and Cost Effectiveness

**Studies,** a program, developed by the NCAA with help from Anheuser-Busch, intended to help universities involve athletics into large alcohol education effort



**Chronic:** referring to long durations of alcohol consumption or increased frequency of alcohol consumption over an extended period of time

**Duty of Care:** legal obligation in which coaches must ensure athletes are completely ready to participate in a practice, workout, or game, and promote the well-being of those for whom they are responsible

**Evidence-Based Intervention:** practices or programs that have evidence of effectiveness and use integrated policies, strategies, activities, and services to change targeted behavior

**Formal Leader:** individuals designated by the organization or team, such as captains or coaches

**High-Risk:** referring to a group of people that have a higher-than-expected risk for developing a behavior that effects the health and safety of individuals

**Influence:** a person, group, object, or doctrine that has the ability to change how individuals or groups behave or believe

**Informal Leader:** individuals on a team who become leaders through experience and interactions with other team members

**Injunctive Norms:** perceptions of the extent to which peers view alcohol use as acceptable

**Intervention:** the attempt to change the adopted behavior of an individual in order to improve health and safety

**Motivational Interviewing:** counseling approach that seeks to build an alliance between practitioner and client. Approach includes a relational component, technical component skills, four processes (engage, focus, evoke, plan), and sensitivity to the idea of

behavior change designed to help individuals find motivation to make positive decisions and accomplish established goals

Muscle Glucose: important biomolecule found in muscle that is the body's preferred source of energy to cells

Muscle Glycogen: the stored form of muscle glucose

National Institute of Alcohol Abuse and Alcoholism: (NIAAA) one of 27 institutes and centers that make up the National Institutes of Health (NIH). NIAAA supports and conducts research on the impact of alcohol use on human health and well-being, and is the largest funder of alcohol research in the world

National Collegiate Athletic Association (NCAA): a member led non-profit organization made up of 1,117 colleges and universities, 100 athletic conferences, and 40 affiliated sports organizations

Optimal Performance: refers to an athlete's best, most desirable, or peak act in his or her preferred competitive sport

Prevention: the attempt to avoid a certain behavior before it is adopted by an individual to promote health and safety

Quality of Life: an individual's or a group's perceived physical and mental health over time, relating to feelings and functioning of health status

Risk Factor: any attribute or characteristic that increases the likelihood of adopting a behavior

Risky-Behavior: actions that expose individuals to harm or consequences

Self-Concept Theory: is an overarching idea about who an individual thinks they are in terms of physical, emotional, social, spiritual, or other aspects

Social Ecological Model: provides a framework for understanding behavior and different influences and their relationship to one another

Student-Athlete: any participant in a competitive sport sponsored by the college, university, or institution where the student is enrolled

Team Culture: a pattern of shared basic assumptions learned by a group as it solves its problems of external adaptation and internal integration, dependent on sport-type, gender, leadership, size, rituals, history, tradition, values, beliefs, and core assumptions

Values: shared beliefs about ideal ways to behave practiced by members of a team or organization in order to maintain cohesion

### *Review Focus*

The present work is a review of literature associated with alcohol, athletes, student-athletes, behavior, influences, effects of alcohol, and prevention and intervention practices. Understanding the relationship between alcohol and student-athletes, and the risks associated with alcohol use, allows the reader to understand how implementing an effective prevention and intervention program will assist universities and collegiate athletic programs in enhancing performance, decreasing or eliminating alcohol use, and promoting healthy lifestyles.

### *Research Procedures*

Literature supporting this work was found through the University of Montana's online library database and journal search engines, specifically SPORTDiscus, PubMed, and EBSCO. Relevant terms were searched in these databases due to their range of material with a scientific journal focus. Though the issue discussed in this review has

been reported for the last four decades, journal articles used for this research were published from the year 2000-present. Use of contemporary research emphasizes the need for prevention/intervention programs that is practical and will reflect the issue in its present form. Web sources, including [www.ncaa.org](http://www.ncaa.org), were used for additional support regarding the issue between student-athletes and alcohol use and current/past efforts to resolve the issue.

## Review of Literature

### *Relationship Between Alcohol and Student-Athletes*

Student-athletes, especially at the collegiate level, are a high-risk drinking group <sup>1</sup>. Both male and female student-athletes are more likely to drink than their nonathlete peers. Multiple studies have compared drinking behaviors between athletes and non-athletes and have consistently found that athletes drink more frequently and binge drink significantly more than non-athletes <sup>1,2,3,20</sup>. Findings from a study in 2008 indicated that 32% of college students binge drank <sup>3</sup>. The rates for college athletes, a subpopulation of college students, are even higher: 47% of college athletes binge drink and drink more frequently <sup>3</sup>.

In 2012 the National Collegiate Athletic Association (NCAA) suggested that alcohol use among college athletes is a great concern. The NCAA reported that these athletes are more likely to engage in excessive alcohol consumption and experience serious negative consequences <sup>4</sup>. The NCAA reported trends in drinking concurrent to other studies: 83.1% of student-athletes reported drinking alcohol in the last 12 months and 49% reported binge drinking or excessive drinking <sup>4</sup>.

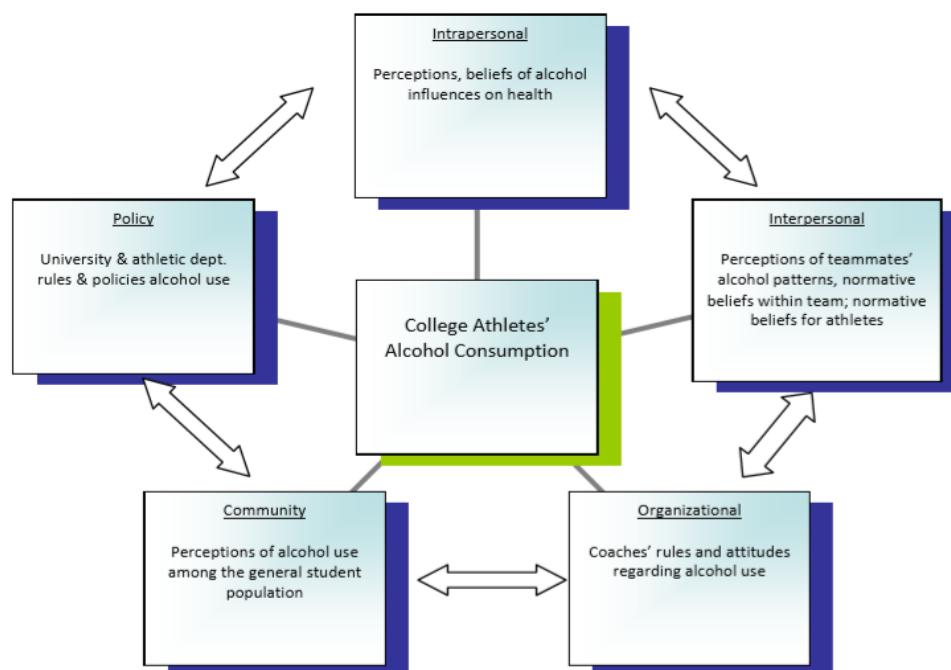
Some studies have even demonstrated that as an athlete's involvement in athletics increases, so does their likelihood to drink alcohol <sup>1,20</sup>. In a longitudinal study of collegiate athletes, students who were involved in intercollegiate athletics from their freshman to senior years demonstrated large increases in heavy drinking, frequency of intoxication, and alcohol-related problems <sup>1</sup>. Students who quit their sport or decreased their athletic involvement (involved as a freshman but not as a senior) showed smaller

increases in heavy drinking, frequency of intoxication, and alcohol-related problems <sup>1</sup>. This study by Cadigan et al. concluded that “students who start athletic involvement engage in heavy drinking, while those who cease athletic involvement drink less than consistent athletes (those who remain athletically involved)” <sup>1</sup>.

This relationship between alcohol consumption and student-athletes has been identified as a major concern for universities and public health agencies <sup>3</sup>. Despite the recognition of this issue, the problem does not seem to be decreasing <sup>3</sup>.

#### *Student-Athlete Behavior and Reasons/Influences for Alcohol Use*

Athletes have been identified by The National Institute of Alcohol Abuse and Alcoholism (NIAAA) as an at-risk college sub-population <sup>5</sup>. The NIAAA uses the Social Ecology Model, a health behavior model, to suggest that behavior is affected by multiple levels of influence: intrapersonal, interpersonal, organizational, community, and policy <sup>5,21</sup>. A study by Williams et al. measured the influences of college athlete alcohol consumption through application of the Social Ecology Model of health behaviors <sup>5</sup>. The Social Ecology Model for College Athletes' Alcohol Use (SEMCAAU) <sup>5</sup>, was used to examine levels of influence that may contribute to alcohol consumption specifically among college athletes (see Figure 1) <sup>5</sup>. Intrapersonal influences include the athlete's perception and beliefs of alcohol influences on health. Interpersonal influences include the athlete's perception of teammates' alcohol patterns and normative beliefs within a team. Organizational influences include coaches' rules and attitudes regarding alcohol use. Community influences include the athlete's perception of alcohol use among the general student population. Finally, policy influences include the university and athletic department's rules and regulations on alcohol use <sup>5</sup>.



**Figure 1.** The Social Ecology Model for College Athletes' Alcohol Use. By Williams et al. Influences on alcohol use among ncaa athletes: Application of the social ecology model. *American Journal of Health Studies*. 2008;23(3):151.

Williams et al. used a non-random sample of 230 NCAA college athletes, representing over half of the total student athletic population at a single university<sup>5</sup>. Using NIAAA guidelines for safe drinking, each participant was categorized as an abstainer (n=50), moderate drinker (n=84), or heavy drinker (n=96)<sup>5</sup>.

Ecological models state that individual levels of influence (interpersonal, intrapersonal) may have a greater degree of influence than environmental levels (organizational, community, policy)<sup>5,21</sup>. Consistent to this idea, the primary influence on drinking among college athletes, regardless of the participant's category, comes from interpersonal and intrapersonal levels (see Table 1)<sup>5</sup>. Personal attitudes and beliefs, as well as perceptions of teammates' attitudes, have an impact on an athlete's decision to consume alcohol and quantity and frequency of that alcohol consumption<sup>5</sup>. College

athletes are subject to additional alcohol regulations from head coaches and the university's athletic department, but those policy issues did not have any impact on alcohol use <sup>5</sup>.

<b>Intrapersonal Factors</b> Perceptions, beliefs of alcohol influences on personal health	Scale significant at $p > .000$ level Heavy drinkers more likely to - think getting drunk is acceptable - show lack of concern about alcohol problems - not see the harm in binge drinking
<b>Interpersonal Factors</b> Perceptions of teammates' and other athletes' alcohol patterns and normative alcohol beliefs	Scale significant at $p = .008$ level Heavy drinkers more likely to - perceive alcohol use is an accepted practice among teammates and other athletes - perceive teammates and other athletes would accept binge drinking - perceive teammates and other athletes do not care about alcohol-related problems
<b>Organizational Factors</b> Perceptions of coaches' rules and attitudes regarding alcohol use	No significant items No significant difference among heavy, moderate, and non-drinkers regarding head coach rules and attitudes on alcohol Head coach rules and attitudes on alcohol do not significantly influence an athlete's alcohol behavior
<b>Community Factors</b> Perceptions of alcohol use among the general student population	Items significant at $p > .000$ (Q16), $p > .000$ (Q18), $p = .014$ (Q22) Abstainers more likely to feel that alcohol use was a problem for students on campus Heavy drinkers more likely to perceive general students do not care about alcohol-related problems
<b>Policy Factors</b> Perceptions of university and athletic department rules regarding alcohol use	Scale not significant No significant difference among heavy, moderate, and non-drinkers regarding school and athletic department alcohol policies School and athletic department rules on alcohol do not significantly influence an athlete's alcohol behavior

**Table 1.** Factors of the Social Ecology Model for College Athletes' Alcohol Use. By Williams et al. Influences on alcohol use among ncaa athletes: Application of the social ecology model. *American Journal of Health Studies*. 2008;23(3):151.

The Social Ecology Model, when used as a framework for alcohol use among college athletes, allows health educators, athletic departments, and coaches to address influencing factors and potentially decrease alcohol use within this population <sup>5</sup>.

Interpersonal influences on alcohol use amongst student-athletes have been addressed in multiple studies. Athletes are more likely to use alcohol when their teammates accept or engage in the same behavior <sup>4</sup>. Research argues that intercollegiate sport teams are



peer intensive and exclusive, meaning student-athletes feel pressured to adopt perceived team norms <sup>4</sup>. Athletes, whose self-concept is closely tied to sport team membership, have beliefs that are shaped by teammate influence. Studies have found that “social identity is positively associated with conformity”, and there is a “drive for social approval, and the desire to behave correctly” <sup>4</sup>. Strong identity with one’s team has some psychological and developmental benefits. However, these findings suggest that an athlete who strongly identifies with their team may feel pressure to adopt risky behaviors, especially alcohol use <sup>4</sup>.

Risky behaviors, specifically alcohol use, coincide with athletics due to athletes’ adherence to social norms <sup>4</sup>. Most student-athletes are in a developmental stage; they are more easily influenced by peers or teammates. During late adolescence (18–22 years of age), the brain is more susceptible to social rewards, even if social rewards are associated with risky behavior <sup>4</sup>. When athletes conform, they will adjust personal attitudes or behaviors to be more like the attitudes and behaviors of specific teammates or the team as a whole <sup>4</sup>. Because conformity and social approval is prominent in athletic teams, interpersonal influences may even dictate intrapersonal influences towards alcohol use.

Intrapersonal influences on alcohol use have not been addressed as widely as interpersonal influences, yet they play a major role in explaining athletes’ behavior and their relationship with alcohol. According to Pitts et al., individual reasons for alcohol use, including coping and enhancement, are strongly related to student-athlete alcohol use <sup>6</sup>. Athletes often experience elevated levels of stressors and alcohol may be used as a coping mechanism for stress <sup>6</sup>. This suggests that when athletes use alcohol for

individual reasons it is to forget about problems that cause stress or to enter a pleasant feeling of enhancement <sup>6</sup>. These individual reasons can also be used to predict the quantity and frequency of alcohol consumption by student-athletes <sup>6</sup>.

To expand on individual and intrapersonal reasons for drinking, Jones et al. focused on the self-concept theory <sup>3</sup>: the concept of who a person thinks they are and the concept of who they would like to be. These researchers looked at specific components of self-identity and self-schema and how they relate to weekly alcohol consumption and binge drinking <sup>3</sup>. The self-concept theory proposes the idea that self-identities influence behavior. Athletic identity is described as “the degree to which an individual identifies with the athlete role” <sup>3</sup>. Athletic identity is not measured by participation in sport, but by how much a person identifies with the social role of athlete. According to the theory, if a person has a high athletic identity, his or her alcohol consumption should match what he or she thinks is acceptable athlete drinking behavior <sup>3</sup>.

Self-schemas are usually looked at in terms of personality traits. These personality traits can be used to understand a person or the environment he or she chooses <sup>3</sup>.

Competitiveness is a personality trait or self-schema that is associated with participation in sport. It is generally a trait that sport psychologists and coaches attempt to instill, hoping to improve athletic performance <sup>3</sup>. Athletes are usually more competitive than nonathletes <sup>3</sup>, this competitiveness motivates participation in drinking games and binge drinking <sup>3</sup>. Participation in drinking games significantly predicts heavy alcohol use and college athletes participate in more drinking games than noncollege athletes <sup>3</sup>.

Furthermore, the most competitive athletes will drink the most in one episode of drinking <sup>3</sup>.

Both interpersonal and intrapersonal influential factors differ between male and female athletes, Black and White athletes, and athletes within different NCAA divisions (I, II, and III) <sup>4</sup>. Milroy et al., determined the most important reasons for drinking *and* for not drinking within these subgroups <sup>4</sup>. The biggest influence to drink, for both males and females, was interpersonal reasons of celebration. Males rated not being of legal drinking age as their most important reason for not drinking, and females rated effect on athletic performance as their most important reason for not drinking <sup>4</sup>. Both Black and White student-athletes rated effect on athletic performance as an important reason for not drinking, but significantly more White than Black participants reported the reason as important <sup>4</sup>. This may suggest that White student-athletes worry more about the negative impact of alcohol on their athletic performance than Black student-athletes <sup>4</sup>. Across all three NCAA divisions, drinking alcohol to celebrate was the most important reason for alcohol use <sup>4</sup>. Unlike comparisons between male and female and Black and White participants, there were few significant differences for reasons of non-use of alcohol between the three divisions <sup>4</sup>. The study suggests that reasons for not drinking should not be underestimated. Both intrapersonal and interpersonal reasons for drinking and for not drinking could be integrated into intervention programs to enhance effectiveness for this population.

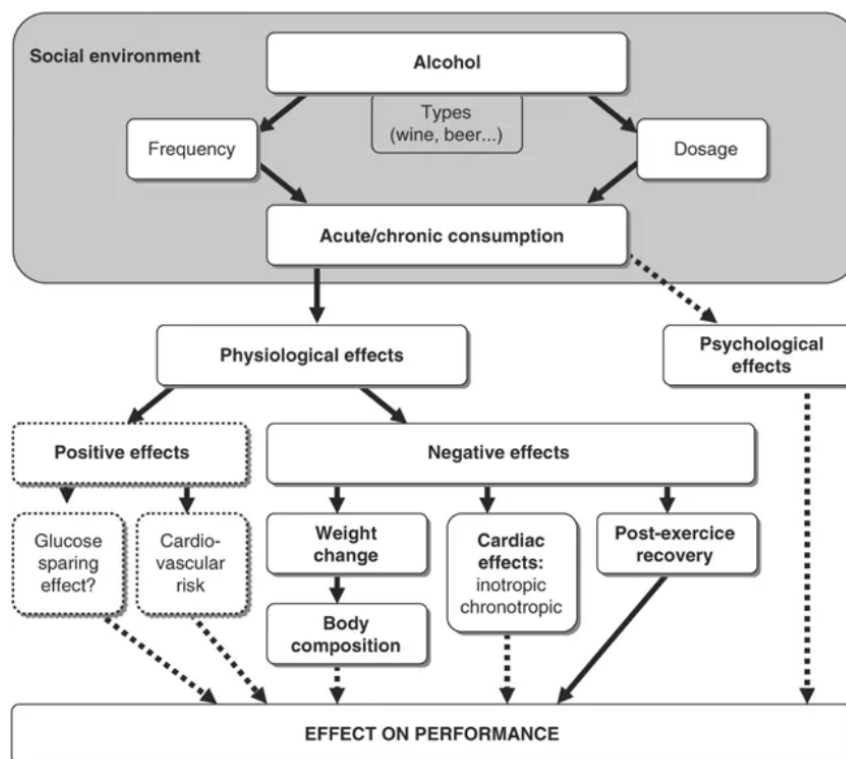
### *The Negative Effects of Alcohol on Athletic Performance*

For the general population, alcohol has negative physiological and psychological effects. Athletes are not exempt from these negative effects; acute and chronic alcohol consumption may adversely affect athletic performance <sup>7,19</sup>. The effects of alcohol are dependent on amount of alcohol consumed, timing of consumption, nutritional status,

and rates of recovery <sup>19</sup>. Negative effects on performance are less likely to occur if alcohol is consumed acutely or in low doses, however the consumption of even low doses of alcohol before or after exercise should be discouraged <sup>19</sup>.

Acute alcohol consumption may impair muscular work capacity, impair temperature regulation, and increase the onset of fatigue during high intensity exercise <sup>8</sup>. Alcohol also influences energy sources used during exercise and the metabolism of fat and carbohydrates <sup>8,9</sup>. These two macronutrients, used for energy, will partially be displaced due to alcohol availability <sup>8</sup>. Alcohol consumption also lowers muscle glycogen at rest, decreasing leg-muscle glucose uptake <sup>8,9</sup>. These effects decrease the chance for optimal performance during a bout of exercise, especially aerobic or endurance exercise <sup>19</sup>.

Neurocognitive function is also impaired when alcohol is consumed. The depressant effect of alcohol slows the ability of the central nervous system (CNS). The ability of the CNS to process information slows down, in terms of long-term and short-term function <sup>7</sup>. Poor CNS efficiency may result in poor decision making and potential injuries. Athletics require learned movements that depend on neuromuscular patterns and psychomotor skills <sup>9</sup>. Accuracy and balance, reaction time, and coordination are examples of skills that may be negatively affected by alcohol <sup>8,9</sup>. The degree to which these skills and physiological factors are altered is dependent on the amount and types of alcohol consumed, dosage and frequency, endogenous factors such as differences in tolerance, and exogenous factors (mainly environmental) <sup>8</sup>. (see Figure 2)



**Figure 2.** Schematic view of the numerous psychological and physiological effects induced by alcohol consumption and their potential impacts on athletic performance. By Gutgesell M, Canterbury R. Alcohol usage in sport and exercise. *Addiction biology*. 1999;4(4):373-383

Chronic and excessive alcohol use has a greater effect on muscular work capacity, temperature regulation, onset of fatigue, and CNS efficiency than acute alcohol consumption<sup>9</sup>. This use may also lead to more severe problems including cardiac dysfunction such as cardiac arrhythmias or an increased risk of cardiovascular disease<sup>9</sup>. Chronic alcohol use, like acute alcohol use decreases the chance for optimal performance, but also increases health risks<sup>9</sup>.

Veisalgia, or an alcohol hangover, is a consequence of the diuretic properties of alcohol. Consuming excessive amounts of alcohol can create hypohydration<sup>7</sup>, the uncompensated loss of body water. In this state, water that is available in the body is

shunted to critical organs, limiting muscle performance. Proper hydration is a major component of endurance exercise <sup>7,9</sup>. Brenner et al. found that 36% of athletes reported going to a sport practice or contest with a hangover. This potentially exposes collegiate athletes to reduced physical performance and possible injury during participation <sup>10</sup>.

The physiological ability to recover from an injury, regardless of severity, can decrease if alcohol is consumed after a game or event during which the injury occurred <sup>19</sup>. The diuretic and anti-inflammatory effects of alcohol consumption may increase injury recovery time <sup>11</sup>. Both chronic and acute alcohol consumption interfere with the inflammatory response, which is a vital part of recovery <sup>11</sup>. Recovery from injury also requires proper carbohydrate and protein intake and protein synthesis. Alcohol consumption displaces carbohydrates and proteins and impedes glycogen synthesis and storage, decreasing the rates of recovery <sup>11,19</sup>.

Alcohol use not only increases injury recovery time, but it also increases the chance for an alcohol related unintentional injury (ARUI) <sup>12</sup>. An ARUI is an avoidable injury that directly effects athletic performances, collegiate careers, and potential professional opportunities. Because student-athletes are more likely to drink than their nonathlete peers, they have a greater risk for ARUI compared with their nonathlete peers <sup>10</sup>. Head athletic trainers have identified alcohol use after an athletic event as a major concern for the health and safety of student-athletes <sup>12</sup>. In 2012 the NCAA found that 15.3% of student-athletes reported being injured at least once during the last year due to alcohol or other substances <sup>12</sup>.

Brenner et al. 2014 studied the prevalence, factors, and consequences associated with ARUIs among collegiate athletes <sup>10</sup>. The study included a survey that was administered

to 1444 collegiate athletes at 8 universities. 2 universities were NCAA Division I (n = 239 athletes), 3 were NCAA Division II (n = 886 athletes), and 3 were NCAA Division III (n = 296 athletes) <sup>10</sup>. The self-report survey measured collegiate athletes' experience with ARUI. Athletes were asked the number of ARUI incidents they experienced in their lifetime, and descriptions of each ARUI experienced. Descriptors included season when ARUI occurred, injured body part, type, severity, personnel treating the ARUI, location of alcohol consumption and type including the number of alcoholic drinks consumed immediately prior to the ARUI <sup>10</sup>. Collegiate athletes' attitudes toward ARUI was also assessed. Participants were asked if they believed ARUI was a serious issue and whether ARUIs had any impact on their own and the team's athletic performance <sup>10</sup>.

Results showed that, overall, 17.7% of participants (n = 252) reported having experienced an ARUI <sup>10</sup>. Participants were most likely to have an ARUI during their first year in college (38.5%), or their second year in college (23.4%) <sup>10</sup>. Roughly half of the reported injuries occurred during the off season (53.2%), and 30.6% occurred in-season <sup>10</sup>. ARUIs were most likely to occur in the ankle (26.6%), hand (26.2%), or head (25.4%), with the top two injury types being contusions (44%) and lacerations (31.3%). 56% of the ARUIs were described as mild and 8.7% were described as severe, while 16.3% were treated in an emergency department or hospital. 61.5% reported being at a "house party" immediately before the injury, and 32.1% had at least five drinks with only 17% of ARUIs occurring after less than five drinks <sup>10</sup>. 37.7% of participants agreed that ARUI is a serious problem in college athletes. 30% agreed that their college or university should be more involved in administration of policies for dealing with athletes

and alcohol-related problems <sup>10</sup>. Almost 30% were concerned about their team's alcohol use and its effect on athletic performance <sup>10</sup>.

The study by Brenner et al. reports a higher percentage of ARUIs than previously reported by the NCAA. Because ARUIs reportedly occur both in-season and off season, prevention and intervention efforts should be available throughout the entire academic year <sup>10</sup>. Many athletes that participated in this study agreed that ARUIs are a serious problem and they were concerned about the effect they have on performance. This concern, and the rates of ARUIs, present an opportunity for coaches and athletic trainers to implement effective intervention <sup>10</sup>. Athletes may be more likely to consider changing their alcohol use if ARUIs significantly decrease their athletic performance.

Acute and chronic alcohol consumption does not improve athletic performance <sup>9</sup>. Thus, athletes should be advised to avoid drinking alcohol before intense exercise, during a training session or competition, or after training or competition. For athletes who cannot avoid alcohol consumption and deliberately choose to drink, the American College of Sports Medicine (ACSM) recommends, for pre-event, to avoid alcohol consumption greater than a modest amount for at least 48 hours before the competition or exercise event <sup>8</sup>. In the post-exercise recovery period, the ACSM suggests rehydrating first with water and consuming food before drinking alcohol to slow down the alcohol absorption <sup>8</sup>.

### *The Negative Effects of Alcohol on Quality of Life*

Health-related quality of life refers to a person's feelings and functioning in relation to their health status <sup>13</sup>. The frequency and amount of alcohol consumption can impact an



individual's quality of life. Luquiens et al. 2016 assessed health related quality of life in college students using the Alcohol Quality of Life Scale (AQoLS) <sup>13</sup>. The scale was used to document the negative effects of binge drinking and frequency of drinking on students' quality of life. Factors that influence quality of life include activities, relationships, living conditions, negative emotions, self-esteem, control, and sleep <sup>13</sup>. These factors, and dimensions of these factors, were included in the AQoLS. Luquiens et al. found that sleep, ability to work, money spent on alcohol, shame, and general worry about health were highly impacted in binge drinkers <sup>13</sup>. The results showed that as frequency of binge drinking increased, the negative impact on sleep, living conditions, negative emotions, and activities also increased <sup>13</sup>.

Luquiens et al. confirmed that there is a significantly higher level of negative impact on quality of life for a student that has a strong relationship with alcohol <sup>13</sup>. The study suggests that the frequency of binge drinking amongst college students is a critical issue that influences quality of life <sup>13</sup>. This study only looked at college students and did not distinguish student athletes as a sub population. However, student-athletes are more likely to drink and binge drink than students, therefore the negative impact on quality of life could be even more significant for athletes.

Although participation in sports is perceived to discourage unhealthy behavior, including alcohol use, that idea does not always hold true <sup>8</sup>. It is not appropriate to assume that participation in athletics can prevent engagement in risky health behaviors <sup>8</sup>, often caused by alcohol use. Alcohol's impact on behavior and quality of life emphasizes the need for prevention and intervention programs for college athletes.

### *Additional Consequences of Alcohol Use for Student-Athletes*

In addition to negative physiological effects, unintentional injury, and effects on quality of life, student-athletes are subject to more frequent negative consequences. Multiple studies have found that student-athletes experience more consequences than nonathletes due to drinking including neglecting their responsibilities, driving after drinking, having unprotected sex, and experiencing sexual assault <sup>14</sup>. Such consequences can be detrimental towards quality of life and athletic careers.

Student-athlete careers equally depend on academic performance as much as athletic performance. Although research has not focused specifically on academic-related consequences due to alcohol use, disengaging in academics due to excessive alcohol consumption is potentially a serious problem for all student-athletes. Many college athletes receive a scholarship that requires them to maintain a minimum grade point average. Failing to meet this requirement could put a student's status as an athlete in jeopardy <sup>14</sup>.

Research also fails to focus on consequences of alcohol use regarding rules and regulations set by the student-athlete's coaching staff, athletic department, or university. These policies differ based on the university, level or division of sport, or the perception of alcohol use by the coaching staff. When athlete's disregard these rules and regulations (i.e. drink alcohol when they are told not to), they put their ability to compete at risk. Athletes may have to suffer consequences such as suspension from practice and competitions, as enforced by the coaching staff, athletic department, or university.

### *Efforts Made by the NCAA*

In 1991 Anheuser-Busch, an American brewing corporation, ironically recognized an opportunity for athletics to educate people about alcohol use <sup>15</sup>. The corporation donated \$2.5 million to the NCAA to help them to create the program Consortium for Health Outcomes, Innovation, and Cost Effectiveness Studies (CHOICES) which was intended to help universities involve athletics into a large alcohol education effort <sup>15,16</sup>. It wasn't until 1998 that the NCAA got universities involved with this program. To implement the program, select universities were given a maximum of \$15,000 the first year, \$10,000 the second year and \$5,000 the third year <sup>15</sup>. The money was intended to be "seed grants for campuses to do something new or reinvigorate something that already exists, and then institutionalize it so that it can continue after the grant money is gone" <sup>15</sup>. The NCAA, at this time, gave little instruction and recommendations to universities on how to implement a program or institutionalize an educational effort based on alcohol use.

Anheuser-Busch still provides funding for the NCAA CHOICES grant program. In April of 2014, the NCAA and Anheuser-Busch announced a five-year agreement. Anheuser-Bush agreed to provide the NCAA with \$600,000 each year to support thorough alcohol education at NCAA schools <sup>17</sup>.

The aim of the CHOICES grant program today is to provide support for "NCAA schools and conferences to integrate athletics into campus-wide alcohol responsibility efforts to help create an environment for students that supports and encourages personal CHOICES that are legal, healthy, appropriate and safe" <sup>17</sup>. NCAA CHOICES intends to help athletic departments with their development and implementation of effective

alcohol-education programs <sup>17</sup>, and encourages programs to go beyond education into areas of social norms <sup>16</sup>.

However, CHOICES is a competitive grant process. Each year the program can only provide up to 15 new, three year, projects to NCAA schools <sup>17</sup>. The program provides funds for a three-year alcohol education project, with the expectation that the project will be continued at the end of the grant <sup>17</sup>. To receive funding for this program, NCAA schools must apply for a grant based on the need for alcohol education for students and student-athletes at their campus. Since the beginning of this project nearly three decades ago, less than 300 NCAA schools have been awarded a grant through the CHOICES program <sup>17</sup>.

Once a school is awarded a grant for this project, the program is customizable and flexible. CHOICES does not require that programs focus on alcohol abstinence, but it must include alcohol responsibility <sup>15</sup>. Most of these projects include peer education, collaboration of multiple campus organizations, media campaigns, community outreach, and events offering alternatives to alcohol use <sup>18</sup>. The projects involve and encourage student-athletes and non-student athletes to make responsible choices about alcohol use. The name of the program and its focus is decided by the school. Examples of these include: CHOICES: Campus Alcohol Education Partnership with Athletics, Fraternities and Sororities (Eastern Washington University), Students Encouraging Alternatives to Risky Choices (Pace University), Balancing Alcohol Choices (Upper Iowa University), and Making Better CHOICES: Red Storm Student-Athletes Choose Not to Booze (St. John's University) <sup>18</sup>.

There are more than 1,000 NCAA colleges and universities and more than 450,000 NCAA student-athletes<sup>17</sup>. Only an exceedingly small sample of the entire NCAA student-athlete population is affected by efforts of the CHOICES program. Campuses that are fortunate enough to receive a grant might see a decrease in alcohol related problems and alcohol use amongst student-athletes<sup>16</sup>. Unfortunately, the potential decrease in alcohol use at these schools is not significant enough to affect the rates of problematic alcohol use for the entire student-athlete population.

CHOICES is one of few programs the NCAA offers as an effort to enhance student-athlete health and safety through alcohol education. Additional efforts made by the NCAA to address the issue include: APPLE Institute, 360 Proof, and myPlaybook<sup>16</sup>. However, CHOICES attracts many applicants each year and is the most coveted program, indicating that it might be the most effective and most beneficial<sup>17</sup>.

### *Evaluating Program Effectiveness*

A study by Butts et al. examined the impact of a one-year alcohol responsibility program, funded by CHOICES, at a NCAA Division II university<sup>16</sup>. The program included a social norm campaign, athlete peer mentoring, referral training, opportunities for non-alcohol events, and educational seminars regarding alcohol responsibility<sup>16</sup>. Subjects included a random sample of 150 student athletes in the fall of 2007 who were not subject to any intervention, and a random sample of 150 student-athletes selected in the fall of 2008 that went through a one-year intervention program<sup>16</sup>. To measure the impact of the program, subjects were given the CORE Drug and Alcohol Survey<sup>16</sup>. The survey examines athlete's alcohol use in past 12 months, binge drinking occasions within past two weeks, serious personal problems related to alcohol, public misconduct

in past 12 months, belief that peers drink weekly, and preference to no alcohol at parties<sup>16</sup>.

Results showed a significant impact, for subjects that were exposed to the program, in two of the six categories examined in the survey. There was a significant improvement in the number of athletes that reported binge drinking within the past two weeks, and there was a significant decrease in alcohol-related personal problems<sup>16</sup>. (see Table 2)

Athletes Reporting of Alcohol Responsibility Issues and Perceptions Before (2007) and After (2008) an Alcohol Responsibility Intervention Program (N=300)						
	some use in last 12 months	≥1 binge occasion in recent 2 weeks	serious personal problem related to alcohol	≥1 public mis-conduct	believe peers drink weekly	prefer no alcohol at parties
2007	88%	65%	41%	56%	100%	22%
2008	73%	42%	18%	39%	82%	28%
t	1.27	2.09	1.72	1.68	1.49	0.81
Sig.	.214	.041*	.039*	.269	.272	.371

*Note.* \* $p < .05$ , one tailed test,  $df = \infty$

**Table 2.** Summary of athletes reporting alcohol responsibility issues and perceptions before and after and alcohol responsibility intervention program. By Butts, Frank B. A study of alcohol responsibility among college athletes. *The Sport Journal*. 2009;12(3):1.

The program's intervention efforts were not entirely unsuccessful at this university. The decrease in alcohol use and alcohol related problems may be credited to the fact that the program included multiple intervention efforts: education, peer mentoring and referral training, social norm campaigns, and alcohol-free events<sup>16</sup>. However, it is unknown if outside variables had an impact on one or more of these categories<sup>16</sup>. This study implies that an effective CHOICES project aimed at improving alcohol responsibility should involve education, awareness, peer influence and opportunities for alcohol free activities<sup>16</sup>. Yet, social norms among student-athletes might be the most influential factor for alcohol use<sup>16</sup>. Social norms should not be underestimated;

correcting problematic social norms might serve as a better focus for programs, including CHOICES, that intend to decrease alcohol use.

### *Social Norms and Team Culture - Impact on Drinking Behavior*

Student-athletes' drinking behavior largely depends on perceived social norms and team culture<sup>23,24,25</sup>. Previous research suggests that the quality of peer relationships, especially for college students, increases peers' influence on individual behavior<sup>24</sup>. In attempts to increase chances of overall team success, college athletes are forced to spend a significant amount of time with their teammates in order to build strong relationships<sup>24</sup>. These strong relationships make it difficult for athletes, or any member of a team, to not be strongly influenced by perceived team norms.

College teams usually have a strong group identity, close social networks, and injunctive norms<sup>24</sup>. Injunctive norms, the perceptions of the extent to which peers view alcohol use as acceptable<sup>24</sup>, are the strongest predictor of student-athletes' attitude towards alcohol use<sup>24</sup>. To maintain group cohesion and identity, it is essential for athletes to demonstrate socially approved behavior. Socially approved behavior includes drinking behavior. Research suggests that athletes have a greater need for peer approval of drinking compared to nonathletes, leading to higher rates of heavy drinking in most cases<sup>24</sup>.

In other cases, peer approval may lead to lower rates of heavy drinking<sup>24</sup>. This factor is dependent on the team's culture and the precedents within that team. Team or organizational culture may be defined as "a pattern of shared basic assumptions learned by a group as it solves its problems of external adaptation and internal

integration”<sup>26</sup>. Team culture varies due to sport-type, gender, leadership, size, rituals, history, tradition, values, beliefs, and core assumptions<sup>26, 27</sup>.

Team culture depends on four elements: stability; depth; breadth; and integration<sup>26</sup>. Stability is present when values are constant and hard to change despite athlete or personnel turnover<sup>26</sup>. Depth of culture is achieved when it appears in everything the team does, and values influence team decisions subconsciously<sup>26</sup>. Breadth occurs when the culture is present in all aspects of the organization, from top to bottom, and can help increase group productivity<sup>26</sup>. Integration refers to how well cohesion is achieved regarding behaviors, values, and rituals<sup>26</sup>; this cohesion enhances the strength of a culture<sup>26</sup>.

Once team culture is established, it is important for members to understand what values comprise that culture<sup>26</sup>. Values, shared beliefs about ideal ways to behave, are practiced by members of the team in order to maintain cohesion<sup>26</sup>. Values are usually advantageous but can be detrimental to the success of a team. Values can be positively or negatively correlated with drinking and frequency of alcohol consumption, depending on the team. A team’s culture may support drinking for reasons of celebration, team bonding, or coping. Or it may disfavor drinking due to its effect on athletic performance or fear of additional consequences. Whichever the case, drinking behavior of team members is influenced by the team’s culture and its values.

The actual make-up of the culture that includes all four elements mentioned previously<sup>26</sup>, can be consciously influenced by the leaders within that team. Leaders on a team serve in a variety of different roles. Formal leaders are those designated as leaders by



the organization or team, such as captains or coaches<sup>28</sup>. Informal leaders are individuals on a team who become leaders through experience and interactions with other team members<sup>28</sup>. An athlete in a leadership role (formal or informal), is someone who influences team members to achieve a common goal, has strong connections with teammates, and partakes in the team's leadership process<sup>29</sup>.

First, those who have the most influence on the team's direction and behavior, formal or informal, must embrace and enforce values. Second, alignment of leadership, from top to bottom, is needed to build strong team culture. This makes the selection of leaders, that will embrace desired team values, vital for team culture and cohesion<sup>26</sup>.

Leadership influences team drinking behavior and has the potential to change team values regarding alcohol use.

#### *Coaches and Athletic Personnel - Duties and Impact on Drinking Behavior*

Depending on the team and the organization, leadership extends into a long chain of command. For collegiate student-athletes, this begins with the university or institution they are at. As students, they must abide by the university's written procedures and policies. Universities employ a head athletic director, and usually an assistant athletic director, to overlook team events and operations. Within the team there is a head coach, under that coach there are often, but not always, multiple assistant coaches and graduate assistant coaches. The coaching staff generally assigns captain and co-captain roles to players on the team. In order to discourage student-athlete alcohol abuse, leaders (from co-captains to university presidents) need to share the same values and knowledge regarding alcohol use and drinking behavior.

Aside from their teammates and coaches, collegiate athletes work closely with other athletic personnel. Athletes consult with formal leaders<sup>28</sup>, including strength and conditioning coaches, athletic trainers, team physicians, sport psychologists, and academic advisors. People in these positions work with athletes regularly. The impact they have on the lives of student-athletes is just as significant as the impact a head coach has on an athlete. These individuals form close relationships with their athletes and are expected to provide a level of care while promoting the athlete's well-being. All athletic personnel should be aware of drinking behavior, should attain the knowledge needed to prevent/intervene alcohol abuse, and must also share the same values as other leaders in the organization.

The role of a collegiate coach, or anyone who works directly with athletes, comes with the duty of care towards the well-being of those for whom they are responsible<sup>30</sup>. Duty of care is a legal obligation in which the coach must ensure athletes are completely ready to participate in a practice, workout, or game<sup>30</sup>. There is growing concern regarding the safety and well-being of college athletes who participate in excessive drinking, and then attempt to participate in their sport<sup>30</sup>. With college athletes joining this culture of excessive alcohol consumption, head coaches and athletic personnel need to address and intervene on behalf of athletes who abuse alcohol<sup>30</sup>. When institutions and athletic personnel fail to address problems associated with alcohol consumption, they fail to provide safety and protection to college athletes. If athletes engage in activity while alcohol is still present in the blood, coaches violate the duty of care<sup>30</sup>. Athletes who drink prior to the 48 hours leading up to a practice or game expose themselves to serious injury, which can be harmful to long-term well-being<sup>30</sup>.

The strongest influence on athletes' alcohol consumption, evident by the Williams et al. study<sup>5</sup>, comes from intrapersonal and interpersonal (personal or team influences) levels of influence, rather than from rules, policies, or their coaches' influence<sup>5,30</sup>. Regardless of this contradiction, many of the head coaches who participated in the survey by Nolt et al. indicate they enforce a policy called the 48-hour rule of drinking with their athletes<sup>30</sup>. This 48-hour rule, not endorsed by most institutions nationwide nor the NCAA, states that athletes should not consume any alcohol 48 hours before a practice or game<sup>30</sup>. Head coaches enforce rules and policies regarding alcohol, such as the 48-hour rule, to promote safety and legal duties, but often fail to address major issues/risks associated with excessive drinking.

Coaches and athletic personnel need to be educated on information concerning student-athlete drinking behaviors<sup>30</sup>. According to Nolt et al., head coaches are not efficacious in their ability to help, and they do not feel confident in their ability to identify the signs and symptoms of athletes who drink<sup>30</sup>. They need to develop intervention skills so that they may adequately and successfully discourage their athletes from engaging in unhealthy behavior, specifically excessive alcohol use<sup>30</sup>. Because rules and policies do not strongly influence athlete's behavior<sup>5</sup>, intervention and prevention programs, that are encouraged by all leaders and athletic personnel, may be more effective in attempts to decrease or discourage drinking.

Prevention/intervention efforts need to be universal. Coaches have expressed that they do not think athletes will confide in them when they need to discuss problems related to alcohol<sup>30</sup>. If this is the case, athletes may perceive their head coaches as unable to intervene and are not confident that their coaches can help<sup>30</sup>. If an athlete is unable to

rely on their head coach, they can instead reach out to someone they have built a relationship with, such as an athletic trainer or strength and conditioning coach. When individuals that provide care to athletes have the appropriate skills and knowledge to deal with issues regarding alcohol use, they are able promote safety and athletes are more likely to avoid alcohol and improve performance.

## Practical Recommendations

### *Framework*

An effective prevention and intervention program for this population should be based on the Social Ecological Model, and each level of influence (see Figure 1) <sup>5</sup>. Emphasis should be placed on primary influences: interpersonal factors and intrapersonal factors <sup>5</sup>. These influences are the main focus of this framework and are addressed first. Other influences, community factors, organizational factors, and policy factors, do not have a significant influence on drinking behaviors <sup>5</sup>. These influences are still included in the framework to provide the best, most inclusive approach for prevention/intervention.

***Interpersonal Influence.*** Interpersonal factors include the athlete's perception of teammates' alcohol patterns and normative beliefs within a team <sup>5</sup>. Athletes are more likely to use alcohol when their teammates accept or engage in the same behavior <sup>4</sup>. College athletes feel pressured to adopt perceived team norms and their beliefs are shaped by teammate influence <sup>4</sup>. An athlete who strongly identifies with their team feels pressure to adopt risky behaviors, especially alcohol use <sup>4</sup>. Because conformity and social approval is prominent in athletic teams, interpersonal influences may even dictate other levels of influence towards alcohol use. This significance makes interpersonal factors the most important implication in prevention/intervention framework.

For successful prevention/intervention, interpersonal factors need to be properly addressed. Athletic personnel, when targeting college athletes' alcohol use, need to provide educational campaigns that focus on social norms and student-athlete drinking rates. Athletes need to be aware of their likelihood to adopt team norms related to

drinking. Despite personal beliefs, athletes are likely to accept a team culture that favors drinking for reasons of celebration, team bonding, or coping. Team culture and team values related to alcohol use are influenced by both formal and informal leaders within the team. The most influential leaders on the team should partake in prevention/intervention efforts to establish appropriate team culture and social norms.

***Intrapersonal Influence.*** Intrapersonal factors include the athlete's perception and beliefs of alcohol influences on health <sup>5</sup>. Personal perceptions and beliefs, or individual reasons, can predict the quantity and frequency of alcohol consumption by student-athletes <sup>6</sup>. Individual reasons for alcohol use, including coping and enhancement, are strongly related to student-athlete alcohol use <sup>6</sup>. This suggests that when athletes use alcohol for individual reasons it is to forget about problems that cause stress or to enter a pleasant feeling of enhancement <sup>6</sup>. Individual reasons for not drinking include not being of legal drinking age and effect on athletic performance <sup>4</sup>.

To address intrapersonal factors, prevention/intervention efforts need to focus on each athlete's perception of alcohol. These perceptions vary greatly among members of a team. Perceptions, whether they are positively or negatively associated with alcohol use, should be evaluated by athletic personnel before perceptions are influenced and changed by the team's drinking habits and perception of alcohol. Athletic personnel employing prevention and intervention efforts should encourage athletes' independence and encourage athletes to not let their perceptions be negatively influenced by peers or teammates.

Prevention/intervention efforts should address all individual reasons for both drinking and not drinking. Athletic personnel should provide support and alternatives for reasons

to drink, i.e. coping and enhancement. Athletic personnel should not underestimate reasons for not drinking, as they are just as influential. Reasons for not drinking should be emphasized in prevention/intervention programs through proper education.

**Community Influence.** Community factors include the athlete's perception of alcohol use among the general student population <sup>5</sup>. College athletes who drink believe that it is a normal part of college life for most students on campus <sup>5</sup>. Athletes commonly have a misconception that drinking alcohol is a standard practice for all college students <sup>5</sup>, when in fact college athletes drink more frequently than their non-athlete peers. Athletic personnel need to educate athletes on actual drinking rates, allowing college athletes to realize that actual use is much lower than perceived use <sup>5</sup>.

Additionally, prevention/intervention efforts should target the entire student population at a university, including both athletes and non-athletes. Athletes are most strongly influenced by those they spend the most time with, this generally being their teammates. However, athletes spend a significant amount of time with other peers, may they be athletes on another team or non-athletes, and are influenced by their drinking habits as well.

**Organizational Influence.** Organizational factors include coaches' rules and attitudes regarding alcohol use <sup>5</sup>. A head coach's perspective on alcohol has little to no effect on athletes' drinking behavior <sup>5</sup>. Regardless, athletes are subject to rules and regulations set by the head coach. Coaches expect their athletes to abide by those rules to avoid consequences and punishments. Coaches, before setting rules and regulations, should convene with their athletes to understand the teams' perception of alcohol. From there,

realistic, team-specific rules and regulations should be set and agreed upon by all members of the team.

Additionally, if a coach has a negative perception of alcohol, and intends for athletes to abstain from alcohol, the coach should confront both informal and formal athlete leaders of the team. Convincing athletes in these roles to abstain from drinking will further encourage other team members to do the same, as athletes are more easily influenced by teammate perceptions than coach perceptions.

***Policy Influence.*** Policy factors include the university and athletic department's rules and policies on alcohol use <sup>5</sup>. Much like organizational factors, the university's and athletic department's rules on alcohol have little to no effect on athletes' drinking behavior. The amount of influence policy has on athletes' drinking behavior may be dependent on the size of the university <sup>5</sup>. Smaller universities and athletic departments may have more control over policy matters. Larger universities, with large athletic departments, have a bigger challenge when it comes to monitoring athlete behavior due to the number of athletes <sup>5</sup>.

Regardless of the size of the institution, policies set by the institution and athletic department should be in effect for all teams and all athletes, and they should be understood by all athletic personnel. Policies, despite the effect they may or may not have, should be clear, accessible, realistic, and enforceable <sup>5</sup>.

***Guiding Prevention/Intervention.*** Multilevel perspectives, such as the Social Ecological Model, are used in health education and health promotion to explain behavior and potentially change behavior <sup>21</sup>. Using the Social Ecological Model as a



framework helps to understand the relationship between student-athletes and alcohol use and provides direction for effective prevention and intervention efforts <sup>5,20</sup>.

Athletic department staff and university administrators should collaborate to properly address alcohol use among college athletes <sup>5</sup>. Both parties should use and understand the multi-level approach of social ecology <sup>5</sup>. However, since athletic department staff, specifically coaches, have direct authority and contact with college athletes, they should take the lead in prevention/intervention.

To begin prevention and intervention efforts, the best approach for this population is to address levels of influence based on the Social Ecology Model (see Figure 3). Using such framework helps athletic personnel understand which factors contribute to student-athlete drinking behavior, but additional components are needed for effective prevention/intervention methods. The section to follow provides guidelines, based on each level of influence, with multiple components and strategies for ideal prevention and intervention efforts.



**Figure 3.** Framework for prevention/intervention of college athlete alcohol use based on the Social Ecology Model. Adapted from The Social Ecology Model for College Athletes' Alcohol Use. By Williams et al. Influences on alcohol use among ncaa athletes: Application of the social ecology model. *American Journal of Health Studies*. 2008;23(3):151.

## *Guidelines*

The presented literature review highlights the need for an effective prevention/intervention program based on the prevalence of alcohol consumption amongst collegiate athletes. College athletes are more likely to use and abuse alcohol than to abstain <sup>2</sup>. Despite the recognition of this problem, there has not been a significant decrease in alcohol use amongst the collegiate athlete population. This could be a result of ineffective prevention/intervention programs, or the lack of prevention/intervention programs. Because college athletes are a high-risk drinking group <sup>1</sup>, prevention/intervention programs with specific guidelines need to be available and implemented at all universities, for all athletes.

For prevention/intervention programs to be effective, they need to include multiple components and strategies. Prevention and intervention strategies may differ depending on social norms, team culture, and the severity of alcohol use amongst athletes. Because of this variance, prevention/intervention programs need to be adaptable, and program design should be based on the severity of use and athletes' perception of alcohol use. The severity and perception of alcohol use varies across teams and organizations, so prevention/intervention programs cannot use a 'one size fits all' approach. However, programs need to be implemented universally, following guidelines that promote athlete success and well-being while decreasing the frequency of alcohol consumption.

The table below provides ideal components and strategies for best prevention and intervention efforts. These are minimum guidelines to be followed when implementing prevention and intervention efforts, though additional components and strategies may

be needed upon evaluating the severity and perception of alcohol use. Each component from the table below is necessary for program effectiveness, though key components from these guidelines are highlighted in the following section.

Prevention		Intervention	
<input type="checkbox"/> Educational Campaign	⇒ If not provided by university must be provided by athletic department or coaches	<input type="checkbox"/> Educational Campaign	⇒ Available to all athletic personnel and includes multiple components
<input type="checkbox"/> Appropriate Timing	⇒ Campaign and program activities start at the beginning of the academic year or sport season	<input type="checkbox"/> Repetition/Follow Up	⇒ Campaign and other activities implemented year round
<input type="checkbox"/> Address Reasons for Use	⇒ Inform athletes of top reasons for alcohol use (coping and celebration)	<input type="checkbox"/> Combat Reasons for Use	⇒ Provide resources and alternative activities to substitute use
<input type="checkbox"/> Address Reasons for Non-Use	⇒ Inform athletes of top reasons to abstain from alcohol use (effect on performance, not being of age)	<input type="checkbox"/> Emphasize Reasons for Non-Use	⇒ Re-inform/emphasize negative effects and consequences of use
<input type="checkbox"/> Establish Team Culture	⇒ Evaluate and establish team culture prior to prevention/intervention	<input type="checkbox"/> Change Team Culture	⇒ Promote change in culture if culture encourages or practices frequent alcohol use
<input type="checkbox"/> Establish Team Values	⇒ Before sport season begins, establish team values that promote abstinence from alcohol	<input type="checkbox"/> Enforce Team Values	⇒ During season remind athletes of values agreed upon before the season
<input type="checkbox"/> Coach Role	⇒ Head coach should take the lead implementing program before the season	<input type="checkbox"/> Coach Role	⇒ Head coach should take the lead implementing program year round
<input type="checkbox"/> Student-Athlete Recruitment	⇒ Coaches should recruit athlete leaders that practice and encourage abstinence	<input type="checkbox"/> Student-Athlete Involvement	⇒ Athlete leaders play active role in program implementation year round
<input type="checkbox"/> Universal Inclusion	⇒ All athletic personnel receive training and take part in educational campaign	<input type="checkbox"/> Universal Engagement	⇒ All athletic personnel play active role in program implementation and are able to intervene when necessary
<input type="checkbox"/> Athlete Screening / Personnel Training	⇒ Athletes go through individual screening sessions before season, personnel learn how to identify abuse	<input type="checkbox"/> Identify Signs/Symptoms	⇒ Upon identifying abuse, make a referral for intervention or intervene using motivational interviewing
<input type="checkbox"/> Develop Policy	⇒ Policy should reflect team values and is agreed on by the team before season	<input type="checkbox"/> Enforce Policy	⇒ Policy should be enforced throughout the year by coaches and athletes
<input type="checkbox"/> Evaluate Outcomes	⇒ Evaluate prevention effectiveness on a minimum yearly basis	<input type="checkbox"/> Evaluate Outcomes	⇒ Evaluate intervention effectiveness on a minimum yearly basis

**Table 3.** Visual representation of prevention/intervention program guidelines, providing ideal implications and strategies for best prevention and intervention efforts based on evidence from literature.

### *Key Components*

**Educational Campaign.** Prevention/intervention efforts should begin with an educational campaign <sup>22</sup>. Ideally, the university or athletic department would provide the campaign; coaches and athletic personnel would receive adequate training and education, and then enforce educational campaigns with their athletes. If the university does not provide a campaign, coaches should take action to educate themselves and their athletes about the relationship between alcohol and student-athletes.

Campaigns can be preexisting, or adopted from another source, but should address the following: the relationship between alcohol and student-athletes, levels of influence, risk factors, misconceptions of use, alcohol responsibility, team culture, social norms, effect on athletic performance, effect on quality of life, additional consequences, and signs/symptoms of abuse.

Providing educational campaigns is a good start for coaches and athletes alike, yet more interactive components are needed for effective prevention/intervention. For high-risk subgroups, like student-athletes, research indicates that education-only programs are not effective in reducing drinking among high-risk college students <sup>11</sup>.

**Address/Combat Reasons for Use.** Athletic personnel need to be aware of the multiple reasons for student-athlete alcohol use. Top reasons for use include coping, enhancement, and celebration <sup>4,6</sup>. Student-athletes use alcohol as a coping mechanism to forget about problems that cause stress, or they drink to enter a pleasant feeling of enhancement <sup>6</sup>. These reasons, whether they are done individually or with the team, predict quantity and frequency of use <sup>6</sup>. Coaches and athletic personnel should make

athletes aware of these common reasons for use, while also providing alternative alcohol-free activities and resources for coping and enhancement.

Drinking for reasons of celebration is most often done when student-athletes are in the company of their teammates. Team leaders should work to establish a team culture that discourages drinking for reasons of celebration. Coaches and athletic personnel should provide alternative alcohol-free activities for athletes who wish to celebrate after an event or competition.

***Address/Emphasize Reasons Non-Use.*** Reasons for not drinking should not be underestimated and need to be emphasized by coaches and athletic personnel.

Leading reasons for non-use, including not being of legal drinking age and effect on athletic performance <sup>4</sup>, may be just as influential on student-athlete behavior as reasons for alcohol use. Most collegiate athletes fall in the age range of 18-22 years old, meaning only a small percentage of college athletes can legally drink. Consequences for underage drinking, whether they are legal actions or enforced by the university, athletic department, or coaches, may affect an athlete's eligibility. To remain eligible to compete, athletes should abstain from underage drinking. This idea should be emphasized year-round.

Student-athletes express that they are worried about the effect alcohol has on their athletic performance <sup>4</sup>. This should also be a major concern for coaches and athletic personnel. Educating athletes about the negative impact alcohol has on their performance should persuade athletes to abstain from use. Alcohol, even when it is not consumed frequently or in large amounts, will have a negative impact on performance <sup>9</sup>. This idea should also be emphasized year-round as most college athletes are expected

to train for their sport year-round. Abstaining from alcohol use, throughout an athlete's career, will help athletes reach optimal performance.

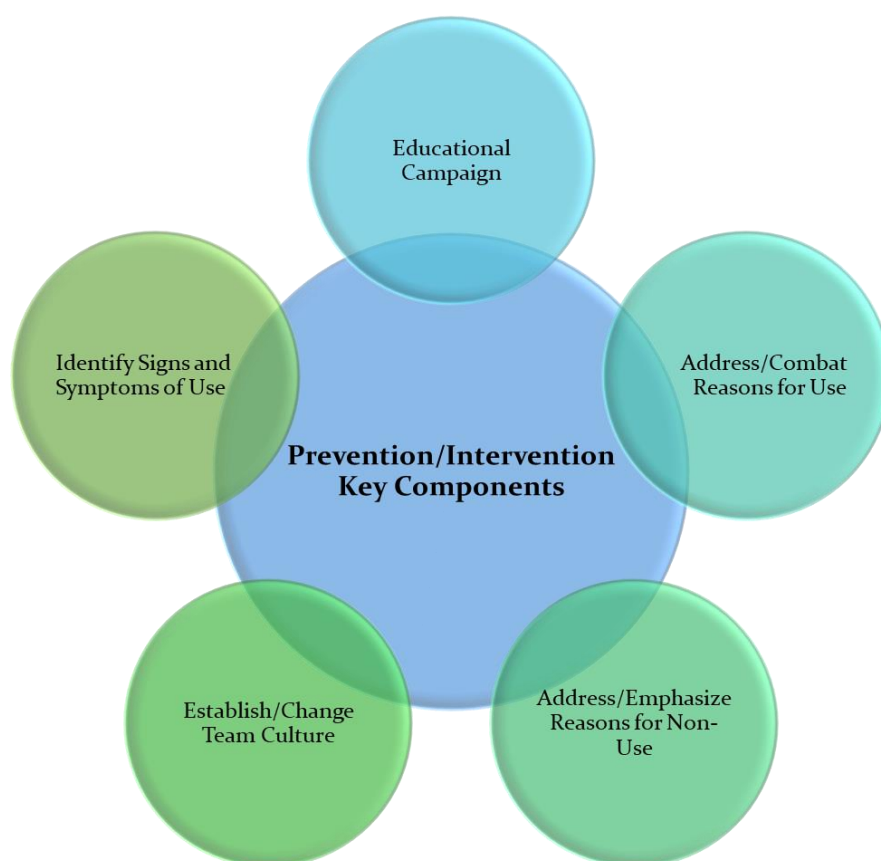
***Establish/Change Team Culture.*** Prior to implementing prevention/intervention components, coaches should evaluate the team's perception of alcohol use and frequency of alcohol use. The perception and frequency of use will determine the need of certain prevention/intervention components. If a team's culture does not practice or encourage alcohol use, coaches should still follow minimum guidelines for prevention/intervention as athlete's perception and behavior are subject to change through other influences.

Team culture should be established before the sport season begins to prevent alcohol use. Both coaches and athlete leaders should work to establish a team culture that values abstinence from alcohol use and should practice those values year-round.

For effective intervention, changing team culture from one that encourages alcohol use to one that discourages use is difficult, but it is powerful if successful. Coaches and athlete leaders should work together to promote this change. Changing team values regarding alcohol use and altering social norms may delay the onset of alcohol use and reduce existing alcohol use <sup>3</sup>.

***Identify Signs and Symptoms of Use.*** In order to intervene in alcohol use with college athletes, coaches and athletic personnel need the ability to identify signs and symptoms of early abuse. Athletic personnel need basic training, provided by the university or athletic department, on how to identify a substance abuse concern and then intervene or make referrals for intervention.

To uphold their duty of care, coaches or other athletic personnel should conduct brief evidence-based interventions, using motivational interviewing techniques, with athletes that are at risk <sup>30</sup>. Motivational interviewing is a counseling approach that seeks to build an alliance between practitioner and client <sup>31</sup>, or in this case athlete and coach. Motivational interviewing includes a relational component, technical component skills, four processes (engage, focus, evoke, plan), and sensitivity to the idea of behavior change <sup>31</sup>. Motivational interviewing techniques have been effective for athletes struggling with substance abuse <sup>31</sup> and should be included in basic training for athletic personnel.



**Figure 4.** Visual representation of key components to be included in prevention/intervention of college athlete alcohol use based on evidence from literature.



## Conclusion

Student-athletes, especially at the collegiate level, are a high-risk drinking group <sup>1</sup>.

Alcohol use among collegiate athletes, specifically, is a major concern due to the variety of consequences associated with frequent use. Alcohol use has negative effects on an athlete's physical performance <sup>7,8,9,12,19</sup>, leads to unintentional injury, decreases quality of life, and puts a student-athletes ability to compete at risk <sup>2,11,12</sup>.

There has not been a significant decrease in alcohol use amongst the collegiate athlete population since the recognition of problematic alcohol use. This could be a result of ineffective prevention/intervention programs, or the lack of prevention/intervention programs. Effective prevention and intervention practices need to be present in (collegiate) athletic programs in order to decrease the frequency of alcohol use by student-athletes.

Coaches and athletic personnel need to be aware of student-athlete drinking behavior and should not rely on the NCAA, or any other organization, to implement prevention/intervention programs. The health and well-being of student-athletes should be a primary concern for coaches, athletic personnel, and universities. Adopting an effective prevention/intervention may not only improve athletes' well-being and performance but will increase the likelihood of success among athletic programs.

Multiple components make up an effective prevention/intervention program. Student-athlete drinking behaviors are influenced primarily by interpersonal and intrapersonal factors <sup>5</sup>. Prevention/intervention programs need to be based on these influences in

order to successfully prevent and decrease alcohol use. This paper provides practical recommendations and guidelines for an ideal prevention/intervention program.

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