

## Polysubstance use among first-year NCAA collegiate student-athletes

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**\*\*\*Note: References indicated with brackets.**

### **Abstract:**

The purpose of this article is to investigate polysubstance use among college student-athletes and determine whether use is independent of gender, race, season status, and athletic division. College student-athletes responded to questions related to their past-30-day use of alcohol, tobacco, marijuana, and prescription drugs. Findings suggest that polysubstance use differs significantly by gender, race, season status, and athletic division. Although a majority of college student-athletes do not engage in polysubstance use, it is reported more frequently for alcohol and tobacco, and alcohol and marijuana. Due to serious consequences associated with polysubstance use, practitioners should consider expanding prevention and treatment efforts to address polysubstance use.

**Keywords:** college student-athletes | polysubstance use

### **Article:**

#### **Introduction**

Alcohol is the substance used most frequently by teens, followed by marijuana and tobacco [26]. Results of the National College Health Assessment (American College Health Association, [1]) suggest that 79% of undergraduate students drank some alcohol, almost 40% used marijuana, and 23% smoked cigarettes during their lifetime. The risks and dangers of illicit drug and alcohol use vary greatly, especially between specific substances. According to Wagner and Anthony ([28]), the risk for progression from first drug use to the onset of drug dependence is greater during adolescent and teen years. In addition, data suggest that while use of individual drugs may vary, the proportion of teens choosing to use substances is more stable and that use is dependent on factors such as gender and race (Johnston, O'Malley, Miech, Bachman, & Schulenberg, [10]).

Generally, males are found to have somewhat higher rates of drug and alcohol use than females (McCabe et al., [17]). Among the most significant differences are those found among the four largest racial/ethnic groups—Whites, African-Americans, Hispanics, and Asians. Among college students, research indicates that Hispanic and White students are more likely to use drugs than Asian and African-American students prior to coming to college and during college (McCabe et al., [17]).

Alcohol and other drug use among college student-athletes is also problematic due to their unique risk for excessive consumption and related negative consequences compared to their non-athlete peers. Literature identifying college student-athletes as an at-risk population for engaging in risky alcohol and other drug use behaviors has been well-established (Buckman, Yusko, Farris, White, & Pandina, [4]; Yusko, Buckman, White, & Pandina, [31]). For example, college student-athletes report higher rates of risky alcohol consumption (i.e., five or more drinks per occasion) compared to their non-athlete peers (Grossbard, Lee, Neighbors, Hendershot, & Larimer, [8]; Wetherill & Fromme, [30]; Yusko et al., [32]), and behavior monitoring conducted by the National Collegiate Athletic Association (NCAA; [20]) indicates that 50% of college student-athletes engage in binge or high-risk drinking, as compared to 37% of general college students (Johnston et al., [10]). Notably, when compared to their non-athlete peers, college student-athletes report higher levels of negative alcohol- and drug-related consequences (Brenner, Metz, & Brenner, [3]; Doumas, Turrisi, Coll, & Haralson, [6]; Grossbard et al., [8]; Huang, Jacobs, & Derevensky, [9]; Nattiv & Puffer, [22]). Whereas alcohol emerges as the most common substance used by college student-athletes, the most recent NCAA report underscores additional problematic behaviors such as marijuana, tobacco, stimulant, opioid, and energy drink use (NCAA, [20]). In addition, research suggests that there are significant differences regarding the reasons for using and not using alcohol, tobacco, and marijuana between males and female student-athletes, White and Black student-athletes, and student-athletes of different NCAA divisions (I, II, and III) (Milroy et al., [18]).

Furthermore, previous research suggests that there are significant differences for use and non-use of alcohol between male and female student-athletes, White and Black student-athletes, and student-athletes of different NCAA divisions (Milroy et al., [18]; NCAA, [20]). For example, 80% of male student-athletes report using alcohol within the past 12 months, compared to 82% of female student-athletes; and 83% of Division III student-athletes report using alcohol within the past 12 months, compared to 78% of Division I and 79% of Division II student-athletes. Likewise, alcohol use differences based on race or ethnicity are evident in that Caucasian athletes drink at higher rates than do African-American or other racial- and ethnic-group athletes (Turrisi, Mallet, Mastroleo, & Larimer, [24]).

### Polysubstance use among teens

Polysubstance use (i.e., the consumption of more than one drug over a defined period, simultaneously, or at different times for either therapeutic or recreational purposes) exposes the user to greater harm (European Monitoring Centre for Drugs and Drug Addiction, [7]). For example, drug combinations tend to increase the risks of adverse health effects. Such effects can occur shortly after the consumption of several substances, or within a short time. They can also occur following a long period of use, due to various mechanisms affecting body systems,

including the liver and the central nervous, cardiovascular, or respiratory systems (Macleod et al., [13]; McCabe, Cranford, Morales, & Young, [16]; Stefanis & Kokkevi, [25]). Whereas previous research suggests that most teens do not engage in polysubstance use (Di Bona & Erausquin, [5]), studies have shown that alcohol is commonly used with other substances (Malcolm, Hesselbrock, & Segal, [14]). Concentrated alcohol use is often a major, but overlooked, component of polysubstance use. For example, stimulant drugs such as cocaine may enable users to consume large quantities of alcohol over longer periods than would otherwise be possible. Furthermore, race, gender, and grade level significantly impact the prevalence of polysubstance use (Di Bona & Erausquin, [5]).

Likewise, college student-athletes have been shown to use a variety of substances which are or could be problematic to their health, such as alcohol, marijuana, tobacco, and performance-enhancing drugs. However, most research has focused on prevalence of use without considering potentially harmful interactions between substances. Consequently, at present time there is limited research investigating polysubstance among college student-athletes. Therefore, the purpose of this article is to investigate polysubstance use of alcohol, tobacco, marijuana, and prescription drugs among college student-athletes in the United States, and to determine whether significant differences exist between gender, race, season status, and athletic division of student-athletes. It is anticipated that polysubstance use occurs among college student-athletes and that their use will not be independent of gender and race, as reported by Di Bona and Erausquin ([5]) concerning high school students, the inspiration for this research study. Furthermore, it is expected that polysubstance use among college student-athletes will not be independent of season status and athletic division, as previous research demonstrates for users of individual substances (NCAA, [20]; Yusko et al., [31]).

## **Methods**

### **Participants**

During the 2013-2014 academic year, 47 NCAA member institutions participated in a larger study investigating the efficacy of an online alcohol and other drug prevention program for college student-athletes. At each participating institution, all freshman or transfer student-athletes were invited to participate in data collection ( $N = 5,131$ ), and a total of 3,276 (63.8%) agreed. Some of the college student-athletes who were invited to participate did not do so because of a variety of reasons, including being cut from their team, leaving school, no longer having student-athlete status, or not meeting eligibility criteria.

Although the ages of college student-athletes ranged from 18 to 25 or more years, most participants were 18 or 19 years of age ( $M = 18.84$ ,  $SD = 2.84$ ). This was expected because recruitment strategies of the larger study targeted first-year college student-athletes and most participants were in their first year of eligibility (87.4%). Therefore, investigating potential differences in polysubstance use between college student-athletes of different years of eligibility or age was not appropriate.

Participants described their race as White/Caucasian (79.7%), Black (11.5%), two or more races (4.5%), Asian (1.9%), Hawaiian or Pacific Islander (0.8%), American Indian or Alaskan Native

(0.6%), or other (0.5%). In addition, 7.3% of participants reported their ethnicity as Hispanic. Similar numbers of male (49.2%) and female (50.8%) student-athletes participated in the study, and the sample included all three NCAA divisions; Division I (34%), Division II (40%), and Division III (26%). College student-athletes represented 29 male and female sports, including both in-season and out-of-season sports (56.5% and 43.5%, respectively).

The demographics of student-athletes participating in data collection are similar to the demographics of the general population of NCAA student-athletes. For example, 79.7% of the sample identified as White/Caucasian and 50.8% were female. Likewise, NCAA reports indicate that 78.9% of female student-athletes were White and 46.7% of Division I student-athletes were female (NCAA, [19], [21]).

## Procedures

College student-athletes first received an e-mail invitation with a link that directed them to the online data collection instrument. Prior to accessing any survey question, participants were provided with a detailed description of the study, informed that participation was voluntary, advised that the survey would take approximately 15 minutes to complete, and given a choice to bypass data collection procedures (i.e., informed consent). Those who agreed to participate were automatically directed to a Web-based pretest survey. Anonymity of responses was ensured by the generation of a unique code for each participant upon accessing the survey. To assure accurate tracking of data over time, participants were informed that they must complete the survey in one sitting and could only access the survey once. Recruitment and data collection procedures and protocols were approved by the Institutional Review Board at the University of North Carolina Greensboro.

## Measures and instrumentation

Demographic questions were used to gather information regarding the personal and athletic characteristics of participants. Next, college student-athletes responded to a variety of questions related to their past-30-day use of alcohol, tobacco, marijuana, and prescription drugs (other than prescribed). Based on recommendations by the National Institute on Alcohol Abuse and Alcoholism (NIAAA; [19]), college student-athletes reported one of the following: I have never used this; I have used this but not in the past 30 days, 1 day out of the past 30 days, 2 days out of the past 30 days, 3-5 days out of the past 30 days, 6-9 days out of the past 30 days, or 10+ days out of the past 30 days.

## Plan of analysis

Descriptive statistics provide estimates of the proportion of first-year college student-athletes engaging in specific substance use by demographic categories and present the percentage of polysubstance use by demographic categories. Finally, contingency table analyses using the chi-square statistic are used to determine whether polysubstance use is independent of demographic variables of interest. Only findings in which there is a significant chi-square ( $p < .05$ ), a standard residual  $\geq 2$ , and more than five respondents in the cell are reported.

## Results

Table 1 presents demographic information as well as the percentage of college student-athletes that reported substance use. As expected, alcohol is used by more college student-athletes than other substances.

**Table 1.** Substance Use by College Student-Athletes.

Demographic	N	Substance Use (%)			
		Alc	Tob	MJ	RX
Gender					
Male	1543	43.5	17.3	3.1	1.8
Female	1592	39.6	5.5	2.0	1.1
Race					
White	2311	45.5	11.9	2.5	1.2
Black	331	23.1	4.9	1.8	2.5
Two or more races	134	38.2	15.7	4.5	0.7
Asian	59	24.6	10.2	3.4	5.1
Hawaiian or Pacific Islander	20	16.7	5.3	0	0
American Indian or Alaskan Native	17	29.4	23.5	11.8	5.9
Season status					
In-season	1773	37.5	11.8	2.1	1.1
Out-of-season	1365	46.5	10.7	3.1	1.9
Athletic division					
Division I	1307	42.6	9.5	1.2	1.4
Division II	1064	37.1	13.1	1.7	1.3
Division III	905	45.5	11.7	5.4	1.9
Total	3276	41.6	11.3	2.5	1.5

Note. Alc = alcohol; Tob = tobacco; MJ = marijuana; RX = prescription drug.

**Table 2.** Polysubstance Use by College Student-Athletes.

Demographic	Polysubstance Use (%)										
	AT	AM	ARX	TM	TRX	MRX	ATM	ATRX	AMRX	TMRX	ATMRX
Gender											
Male	13.4	2.9	0.9	1.4	0.7	0.4	1.2	0.4	0.2	0.3	0.1
Female	4.1	1.9	0.8	0.8	0.4	0.2	0.7	0.4	0.2	0.1	0.1
Race											
White	9.2	2.5	0.7	1.1	0.4	0.2	1.0	0.3	0.2	0.2	0.1
Black	3.8	1.9	1.9	0	0.9	0.3	0	1.0	0.3	1.2	0
Two or more races	9.3	4.6	0	3.0	0.8	5.2	3.1	0	0	3.8	0
Asian	5.3	1.8	3.5	3.4	3.4	1.7	1.8	1.8	1.8	1.7	1.8
Hawaiian or Pacific Islander	5.6	0	0	0	0	0	0	0	0	0	0
American Indian or Alaskan Native	17.6	5.9	0	11.8	5.9	5.9	5.9	0	0	5.9	0
Season status											
In-season	8.6	1.9	0.5	1.1	0.5	0.3	1.0	0.3	0.2	0.2	0.2
Out-of-season	8.6	3.0	1.3	1.1	0.7	0.3	0.9	0.5	0.2	0.2	0.1
Athletic division											
Division I	7.6	1.1	1.0	0.6	0.6	0.2	0.5	0.4	0.2	0.1	0.1
Division II	9.8	1.6	0.7	0.6	0.4	0.3	0.5	0.2	0.2	0.2	0.1
Division III	8.7	5.1	1.1	2.4	0.9	0.6	2.1	0.6	0.2	0.5	0.2
Total	8.6	2.4	0.9	1.1	0.6	0.3	0.9	0.4	0.2	0.2	0.1

Note. A = alcohol; M = marijuana; RX = prescription drugs; T = tobacco.

Table 2 presents the percentage of college student-athletes who reported engaging in polysubstance use. Alcohol and tobacco are the substances most often used simultaneously or at different times over the defined period.

Findings suggest that polysubstance use differed significantly by gender ( $\chi^2_{df=1} = 15.83, p < .001$ ), race ( $\chi^2_{df=8} = 80.75, p < .001$ ), season status ( $\chi^2_{df=1} = 17.64, p < .001$ ), and athletic division ( $\chi^2_{df=2} = 11.28, p = .004$ ). In other words, polysubstance use is greater among males versus females, White versus all other races, and those who are out-of-season versus those in-season. In addition, Black college student-athletes reported significantly less co-occurring alcohol, tobacco, marijuana, and prescription drug use than other races. Last, Division II student-athletes reported significantly more co-occurring alcohol and tobacco use, and Division III student-athletes reported significantly more co-occurring alcohol, tobacco, marijuana, and prescription drug use than other college student-athletes.

## Discussion

The purpose of this article is to investigate polysubstance use among college student-athletes in the United States and determine whether significant differences exist between student-athlete gender, race, season status, and athletic division. First, a majority of college student-athletes do not engage in polysubstance use. This finding is consistent with previous research that suggests most teens do not engage in polysubstance use (Di Bona & Erausquin, [5]). Nevertheless, polysubstance use is reported more frequently for alcohol and tobacco, and alcohol and marijuana, compared to other combinations of substances. This finding is of no surprise, considering that alcohol is the substance abused most frequently by teens, followed by marijuana and tobacco (USDHHS, [26]).

Next, significant differences of polysubstance use exist between various subgroups of college student-athletes. Notably, polysubstance use is greater among males, White student-athletes, those out-of-season, and Division III student-athletes. Regarding gender, data suggest that males engage in significantly more polysubstance use than females for all substances investigated. For example, 3 times more males than females report co-occurring alcohol and tobacco use. This finding is consistent with other studies of the general population that indicate males are more likely than females to use illicit drugs [23].

Regarding race, White college student-athletes engage in significantly more polysubstance use than other races, and Black college student-athletes engage in significantly less polysubstance use than other races. For example, White college student-athletes report 2 times more co-occurring alcohol and tobacco use than Black college student-athletes. These findings along with others emphasize the importance of considering gender and race when investigating alcohol and other drug use among college students. This finding is consistent with other studies of the general population that indicate White youths are more likely than other races to use illicit drugs (SAMHSA, [23]).

Another important factor related to polysubstance use among college student-athletes is season status. Considering the lives, daily activities, and responsibilities of college student-athletes in-season versus out-of-season are considerably different (e.g., travel, sport practice, and

competition), it is not surprising that those out-of-season engage in significantly more polysubstance use than student-athletes who are in-season. For instance, college student-athletes reported 2 times more co-occurring alcohol and prescription drug use out-of-season as compared to in-season. This finding is consistent with previous studies indicating that alcohol use and alcohol-related negative consequences decrease during the in-season and that alcohol use increases during the off-season when fewer athletic performance-related demands are present (Martens, Dams-O'Connor, & Duffy-Paiement, [15]; Wahesh, Milroy, Lewis, Orsini, & Wyrick, [29]). Findings suggest that competitive season differences should be carefully considered as an important factor related to polysubstance use among college student-athletes.

Last, with the exception of co-occurring alcohol and tobacco use and co-occurring alcohol, marijuana, and prescription drug use, significantly more Division III student-athletes report polysubstance use than other college student-athletes. This finding is consistent with previous studies by the NCAA that indicate substance use is highest among Division III student-athletes across various drugs (NCAA, [20]). One potential reason for this phenomenon is that drug testing at the Division III level only occurs during championship events and not year round as it does in Divisions I and II. Findings suggest that elevated prevention efforts may be needed among Division III student-athletes to counteract the lack of perceived susceptibility of drug testing and eligibility-related consequences.

#### Limitations

A limitation of this study is that the surveys were self-report, which could have led to socially desirable responses. The negative impact of socially desirable responses was minimized by informing participants that their responses were confidential. In addition, participants in the sample used for this study were intentionally NCAA student-athletes; therefore, results may be generalizable only to student-athletes who attend a NCAA member institution. Furthermore, polysubstance use was measured in such a way (i.e., past-30-day use) that the behaviors may not have happened during this defined period of time. Further research could investigate and clarify the specific temporal nature of polysubstance use among NCAA student-athletes. Despite these limitations, this study provides important insights into the polysubstance behaviors of college student-athletes.

#### Conclusion

First and foremost, this research contributes new knowledge regarding polysubstance use among college student-athletes. A review of literature revealed no other studies investigating these behaviors among this specific population. As mentioned previously, inspiration for this research study was the recent article published by Di Bona and Erausquin ([5]) that investigated the prevalence of polysubstance use among high school students. As previously noted, the present study found significant differences among subgroups of college student-athletes. Similar to the present study, Di Bona and Erausquin found that patterns of polysubstance use differed by race and gender. Exploratory post hoc analyses suggest that the sample of college student-athletes in the present study engaged in significantly greater polysubstance use than the high school teen sample presented in the Di Bona and Erausquin article. Whereas conceptually these two samples are different and direct comparisons are problematic, the differences are not surprising and

appear consistent with literature suggesting that single-substance use increases post-matriculation into college. Thus, future research should directly compare polysubstance use among college student-athletes to their non-athlete peers in order to clarify the impact of athletic status on polysubstance use.

Due to the serious consequences associated with polysubstance use, practitioners seeking to prevent use of alcohol, tobacco, and marijuana among this subpopulation should consider expanding prevention and treatment efforts to address polysubstance use. For example, if a college student-athlete displays problems with one specific substance, it would be prudent to investigate potential polysubstance use and if necessary, provide treatment that specifically addresses this behavior. Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an approach to the delivery of early intervention and treatment to people with substance use disorders and those at risk of developing these disorders that could be employed with college student-athletes (Bernstein & D'Onofrio, [2]). Goal management training and mindfulness meditation (Valls-Serrano, Caracuel, & Verdejo-Garcia, [27]), and 12-step programs (Laudet, Stanick, & Sands, [12]), are treatment options that have been recommended specifically for treatment of polysubstance use disorders and should also be considered. In addition, general alcohol and other drug prevention efforts should consider targeting these substances collectively and address the potential issue of polysubstance use, rather than targeting use of these substances in isolation. In conclusion, these findings encourage practitioners to carefully consider differences between college student-athletes of different genders, races/ethnicities, and athletic divisions, as well as accelerating or supplementing prevention programming during the off-season.

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