



# Misuse of prescription stimulant medication in a sample of college students: Examining differences between varsity athletes and non-athletes



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## HIGHLIGHTS

- The misuse of prescription stimulants is popular among college students.
- Little research has characterized the effect of sports participation on MPS.
- Varsity athletes were less likely to report MPS.
- Motivations for misuse differed slightly between varsity athletes and non-athletes.

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## ABSTRACT

**Background:** The misuse of prescription stimulants (MPS) has been identified as an adverse health behavior among college students. Because stimulant medication is often taken to increase focus and decrease reaction time, these substances have the potential to enhance athletic performance. However, the role that athlete status (varsity athlete vs. non-athlete) has on MPS has rarely been examined in the college student population.

**Objectives:** To examine whether there are differences in past-year MPS and MPS-related motivations between college varsity athletes and non-athletes.

**Methods:** A sample of 682 (482 non-athletes; 200 athletes) college students between the ages of 18 and 25 completed a paper-based questionnaire to assess MPS, MPS-related motivations, and other potential MPS correlates (e.g., gender, energy drink consumption, tobacco use, heavy episodic drinking). Then, we conducted bivariate and multivariate analyses to examine potential correlates of MPS, including athlete status. Finally, we examined differences in MPS-related motivations between varsity athletes and non-athletes.

**Results:** Overall, 98 (13.9%; 16.6% non-athletes v. 7.5% varsity athletes) respondents reported past-year MPS and varsity athletes were significantly less likely ( $p < 0.05$ ) to do so. Past-year MPS was also significantly associated with energy drink consumption, tobacco use, and heavy episodic drinking in our sample. Concerning MPS-related motivations, athletes more often cited a need to enhance athletic performance as the impetus for their misuse.

**Conclusions:** MPS was prevalent among the sample. Varsity athletes were significantly less likely to engage in past-year MPS and were motivated to do so for different reasons.

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## 1. Introduction

Stimulants are one of the oldest classes of performance enhancing substances due their ability to increase the release of neurotransmitters (e.g. dopamine, epinephrine, serotonin), which results in a reduced sensation of fatigue, increased motor activity, and increased alertness (Avois et al., 2006). These effects make the use of stimulants attractive

to college students and studies have shown that college students often engage in the misuse of prescription stimulants (MPS) at higher rates than other peers their age (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2014; McCabe, West, Teter, & Boyd, 2014). MPS is problematic because it can lead to unintended consequences such as cardiac events, dehydration, insomnia, substance dependence, and death (Avois et al., 2006; Deventer, Roels, Delbeke, & Van Eenoo, 2011).

Because of the potential sport enhancement properties and associated health dangers of stimulant medications, their use among college athletes is monitored by the National Collegiate Athletic Association (NCAA) (Avois et al., 2006; Deventer et al., 2011). Only varsity athletes

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who have been granted a medical exception by the NCAA based on a documented diagnosis of Attention Deficit Hyperactivity Disorder are exempt from the repercussions of a positive drug test (NCAA, 2009). Those varsity athletes who have not been granted such exception could receive punishments that range from a disqualification from an event to a loss of eligibility (NCAA, 2012).

Despite the potential additional ramifications for engaging in MPS in the college varsity athlete population, the impact of athlete status on MPS is not well understood. Findings concerning the association between college student athlete status (varsity athlete vs. non-athlete) among other health behaviors vary. For instance, studies have found higher rates of alcohol use (Kwan, Bobko, Faulkner, Donnelly, & Cairney, 2014; Martens, Dams-O'Connor, & Beck, 2006) and performance enhancing drug use (Ford, 2008; Hoyte, Albert, & Heard, 2013; Yusko, Buckman, White, & Pandina, 2008) among college varsity athletes compared to non-athletes. Conversely, being a varsity athlete has been shown to be a protective factor against the use of tobacco (Lisha & Sussman, 2010; Primack, Fertman, Rice, Adachi-Mejia, & Fine, 2010) and illicit drugs (Ford, 2007; Kwan et al., 2014).

We located only one peer-reviewed study examining the effect that athlete status had on MPS among college students. In that study, Ford (2008) found that varsity athletes were less likely to misuse prescription analgesics and tranquilizers but did not find significant differences in MPS between varsity athletes and non-athletes. Another study of college students found that over half of the respondents participating in sports had used a prescription medication to enhance their athletic performance (Hoyte et al., 2013). However, that study did not assess the specific types of prescription medication used.

While little is known about MPS among college varsity athletes, the prevalence, risk factors, and motivations associated with MPS among the general college student population have been examined. Estimates of the past-year prevalence of MPS among college students range from 4.1% to 10.8% (Arria, Caldeira, Vincent, O'Grady, & Wish, 2008; Garnier-Dykstra, Caldeira, Vincent, O'Grady, & Arria, 2012; Johnston et al., 2014; McCabe et al., 2014; Rabiner, 2013). College students engaging in MPS are more likely to be Caucasian, affiliated with a social fraternity or sorority, have a prescription for the medication, and report the abuse of alcohol or other drugs (DeSantis & Hane, 2010; Gallucci, Usdan, Martin, & Bolland, 2014; Rabiner et al., 2009; Sepulveda et al., 2011). Researchers have also found that students who use energy drinks and tobacco products are more likely to engage in MPS (Arria et al., 2010; Sepulveda et al., 2011; Woolsey et al., 2014). College students are often motivated to misuse these medications for reasons associated with academics, including to study longer, to complete academic assignments, and to increase concentration (DeSantis, Webb, & Noar, 2008; Gallucci et al., 2014; Rabiner et al., 2009). Researchers have also identified a desire to lose weight, party longer, and getting high as motivations for misuse (DeSantis & Hane, 2010; Rabiner et al., 2009).

### 1.1. Purpose

To better understand MPS among college varsity athletes, we estimated the prevalence of past-year MPS, MPS-related motivations, and potential MPS-related correlates among a convenience sample of college students. Then, we examined differences based on athlete status (varsity athlete vs. non-athlete).

## 2. Methods

We collected our data from a sample of college varsity athletes and college student non-athletes at a large, private Southwestern university after receiving approval from the Institutional Review Board. Prior to participant recruitment, we reviewed the course catalog to identify course instructors that taught courses required by all students, regardless of major, for degree completion. From this review, we identified 32 instructors teaching multiple sections of required general education

courses (e.g. health education, lifetime fitness). Then, to recruit participants for our study, we sent emails to these class instructors and all athletic trainers at the institution, which explained the purpose of the study and requested time to allow their students or athletes to complete a paper-and-pencil survey. The email indicated that the instructors or athletic trainers were not obligated to donate their time for this study. Athletic trainers from 15 of the 17 sports agreed to allow time for participants to complete the survey. Of the 32 instructors contacted, 25 agreed to allow data collection to occur in 34 classes.

To be better able to detect differences based on athlete status, varsity athletes were purposefully oversampled. Specifically, with the permission of athletic trainers at the institution, we purposefully recruited as many athletes to participate as possible during team sponsored practices/workouts. As a result, we had a disproportionately higher rate of varsity athletes (29.3%) in our sample than in the student body population at the institution this research was conducted (4.0%).

We collected our data in classes or practices during March and April 2014. Prior to distributing the survey, we explained to participants the purpose of the study and that they would not be asked to provide any identifiable information that could link them to the responses provided. Further, we explained that they were free to not answer any questions they did not feel comfortable responding to and could discontinue the survey at any time. To reduce the possibility of duplicate surveys, one researcher completed all of the data collection and made an announcement prior to distributing surveys that students who had already participated in the survey were not eligible to complete another survey. Participants were issued a \$5.00 gift certificate for their participation in the study. In order to reduce coercion and increase participant anonymity, instructors were asked to leave the room during survey completion and varsity athletes were instructed to report to a specific room away from coaches and staff to participate in the study.

From the students enrolled in those classes, 77.3% were in attendance on the day that the surveys were administered. During our data collection in classes, six students indicated that they had participated in another class and three declined to participate. During our data collection among varsity athletes, ten varsity athletes declined to participate in the study and one had completed the survey in class. We collected 490 surveys from student non-athletes and 207 surveys from varsity athletes. Altogether, we received completed surveys from 697 (98.1%) of the 710 students that were recruited.

To be eligible to participate in the study, students had to be undergraduate students between the ages of 18 and 25. After reviewing the survey data, we identified and removed two subjects that failed to meet the selection criteria (i.e., graduate students, older than 25). Then, we removed thirteen students that failed to respond to the question assessing past-year MPS. Thus, we used a sample of 682 for our analyses (482 student non-athletes, 200 varsity athletes).

### 2.1. Measures

We distributed a paper-and-pencil survey that assessed past-year MPS, athlete status, demographic information (i.e., gender, age, year in school, race, Greek affiliation), and other potential correlates of past-year MPS (i.e., current tobacco use, heavy episodic drinking, stimulant prescription status, energy drink consumption). Next, we describe the specific measures that we used in our analysis.

#### 2.1.1. Demographics

We assessed the age, gender, year in school, race, and Greek status (i.e., member of a fraternity or sorority) of participants. We recoded race into five groups (0 = Caucasian; 1 = African-American, 2 = Hispanic, 3 = Asian, 4 = other).

#### 2.1.2. Athlete status

We assessed athlete status with the following question: "Within the last 12 months, have you participated in organized college athletics at

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