REVIEW

Sports and Spirits: A Systematic Qualitative Review of Emergent Theories for Student-Athlete Drinking

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Abstract — Aims: To review the current literature and critically examine theories used to explain the link between athletic status and hazardous alcohol consumption, and highlight emergent perspectives. Methods: A search of online databases (Google Scholar, PubMed, ScienceDirect, PsychINFO) and a systematic methodology were used to identify relevant studies for inclusion. Sixty-six articles were included for review (publishing dates ranging from 1989 to 2013). Results: The majority of the studies were from the USA (n = 52), with cross-sectional surveys the most utilized method of data collection. The literature outlines a number of important sport-specific factors that may be motivating drinking behaviour among student athletes. Moreover, social processes appear particularly important for sport-associated drinking. However there is still paucity in the theoretical underpinnings for this relationship, and the processes through which membership of a sports group may shape its members drinking. The role of identity emerged as an important variable to consider when exploring engagement of health behaviours, such as alcohol consumption. Conclusions: With the aim of reducing alcohol-related harm, the impact of sports group membership on psychosocial variables such as social identity and well-being warrants further exploration. Future research should explore the role of identity and group-level processes when examining the engagement of drinking behaviours of student sportspeople.

INTRODUCTION

Over recent decades alcohol has become cheaper, stronger and more widely available in many societies (WHO, 2011). Although overall consumption rates in the UK and other countries have abated somewhat in recent years, excessive alcohol consumption remains particularly prevalent within the subgroup of 18- to 24-year-olds (Wechsler et al., 2002; National Statistics, 2012; OECD, 2012). Although there are considerable concerns regarding hazardous alcohol consumption within the student population, these can be even more concentrated in the subgroup of students involved in sports. Research consistently indicates that students participating in sport consume alcohol more frequently than those who do not engage in these activities (Martens et al., 2006a; Turrisi et al., 2006). Student sportspeople report being intoxicated more often, consume greater quantities of alcohol, engage more frequently in binge drinking, and appear to experience more alcohol-related harms than those not participating in sports (Wechsler et al., 1997; Leichtliter et al., 1998; Nelson and Wechsler, 2001; O’Brien et al., 2007; Partington et al., 2012; Cadigan et al., 2013). Therefore it is not surprising that researchers highlight the paradoxical relationship between the health enhancing participation of sport, and the health debilitating engagement of hazardous alcohol use (Lisha and Sussman, 2010; Musselman and Rutledge, 2010). Studies investigating the prevalence rates of student sports-related drinking are abundant (e.g. Leichtliter et al., 1998; Nelson and Wechsler, 2001; Ford, 2007a); however, there is less research that looks to elucidate the psychological underpinnings of how and why such a relationship exists. In view that alcohol misuse is a well-documented leading cause of morbidity and mortality (Room et al., 2005), the reasons underlying the Faustian pact between sports and alcohol warrant closer scrutiny.

To date only one review has focused specifically on the issue of university student athlete drinking in order to identify various factors that might motivate alcohol consumption among student athletes (Martens et al., 2006a). The authors indicate there may be certain aspects of the sporting environment itself that motivates drinking. However methodological limitations and the varied results from studies in this area meant a solid explanation could not be proposed, and they encourage researchers to explore the sociocultural link between alcohol and sports. In this instance sporting activities advocate sociality and cohesion between their participants (Carron, 1982) and therefore social influences may be particularly important. Previous research has identified that the cultural and normative drinking traditions in sport often centre on imbibing alcohol in groups and that social drinking was perceived to promote a sense of camaraderie and cohesion (Lawson and Evans, 1992; Stainback, 1997; Black et al., 1999). Student athletes were more likely to report drinking for social reasons than nonathletes (Wilson et al., 2004); thus athletes may engage in alcohol use with other team members as a way of promoting cohesion within their groups. The specific ways group and social influences found in the sports environment that may mediate this relationship therefore require further attention (Martens et al., 2006a).

More recent investigations have begun to look at the concept of group identity as a mechanism for linking group-level influences for alcohol use to individual drinking behaviours. Studies performed with the general student population assert identification as a moderator between perceived normative behaviour and personal drinking (Reed et al., 2007; Neighbors et al., 2010). Research along this vein indicates that athlete identity—the degree to which an individual identifies as a sportsperson and with the athletic role (Brewer et al., 1993)—moderates the relationship between the perception of athlete drinking norms and personal alcohol use (Grossbard et al., 2009a). Grossbard and colleagues suggested that strong identification as an athlete may lead to sportspeople aligning their behaviours with other ‘high-risk’ student athletes in order to validate and maintain their identity and team membership. Specific identification with a prominent social group, i.e. identifying as a member of a sports...
club, may be bridging the link between social influences and individual drinking.

In view of the lack of contemporary research synthesis pertaining to sports participation and alcohol use among competitive recreational athletes, the purpose of the present literature review was to examine systematically, (a) what has been found about drinking behaviours of sports group members to date, (b) which theories have been used to explain the link between athletic status and hazardous alcohol consumption with a view to identifying emergent perspectives, and to (c) highlight unanswered questions and unexplored territories that arise from a critical examination of current literature.

METHODS

Selection of studies

Electronic databases (Google Scholar, PubMed, ScienceDirect, PsychINFO) were used in order to conduct literature searches for articles relevant to university/college sportspeople and alcohol consumption. The first search subject terms utilized were ‘alcohol use’; ‘college sports’; and ‘student athletes’. Similar words for these terms were replaced in the second search in order to capture all articles that may have synonymous key words (e.g. ‘alcohol’/‘alcohol consumption’; ‘university sports’; ‘student sportspeople’). Particular effort was made to identify articles that explored the role of identity and sports group membership; therefore the terms ‘athlete/sports identity’ and ‘sports group membership’ were added to meet the objectives of the review.

Studies were selected based on the following inclusion criteria: (a) the sample population was directly involved in competitive sports participation (sports club/team membership and participating in club or amateur sports); (b) the study outcomes centred around alcohol use, although additional interest in use of other substances was allowed; (c) the full text was available in English and publications were peer reviewed. Based on these inclusion parameters and the main interests of the review, we excluded articles that (a) utilized the variable of ‘physical activity’ as this does not necessarily equate to a sports group membership; (b) based on sport fandom (indirect sports participation); (c) a sample population involving adolescence in school or high school in order to focus on student sportspeople over the age of 18 years; (d) elite athletes involved in sports at a professional and/or international level as these were deemed a separate athletic subgroup; (e) psychometric scales testing and/or validations of measures of alcohol consumption, athlete-specific drinking measures, or measures of identity.

The first round of screening considered the article title in order to immediately remove irrelevant studies. The second round of screening comprised of reviewing the article abstracts on the basis of the inclusion and exclusion criteria. Finally, the full-text articles were assessed for eligibility. Articles retained in the final step of the screening process were assessed for their quality and relevance guided by a checklist as suggested by Khan et al. (2001).

RESULTS

A total of 66 relevant articles were qualitatively synthesized following this protocol (see Table 1). While no publication time constraints were set during the literature search all the included studies were published between 1989 and 2013, suggesting that student-athlete alcohol behaviours have been a focus of research for more than three decades. The search uncovered four articles that included a review of sportspeople’s drinking (O’Brien and Lyons, 2000; Martens et al., 2006a; Turrisi et al., 2006; Lisha and Sussman, 2010) and eight studies assessing the effectiveness of drink-reducing interventions among university athletes (Marcello et al., 1989; Thombs and Hamilton, 2002; Perkins and Craig, 2006; Doumas and Haustveit, 2008; LaBrie et al., 2009, 2010; Doumas et al., 2010; Martens et al., 2010).

The majority of the research was conducted in the USA (n = 52), with studies also being conducted in the UK (n = 3), Australia (n = 2), France (n = 2), New Zealand (n = 2) and Canada (n = 1).

Cross-sectional questionnaires and population surveys were the most utilized data collection methods, and four longitudinal studies and one qualitative study were also identified. Response rate ranged from 33% (online survey) to 94% (face-to-face data collection). Twenty-one of the US papers focused specifically on National Collegiate Athletic Association (NCAA) sportspeople.

DISCUSSION

What do we know so far? Prevalence rates and risks

Only one early study showed no significant differences between athlete and nonathlete students in drinking (Overman and Terry, 1991). The authors noted that ethnicity and gender were more important predictors of drinking than sporting involvement. However, a multitude of subsequent research identified sport participation to be associated with elevated alcohol consumption (Sellby et al., 1990; Nattiv et al., 1997; Ward and Gryczynski, 2007; Tewksbury et al., 2008; Yusko et al, 2008a; Martha et al., 2009).

The ‘high-risk’ profile given to student sportspeople is supported by a number of large national (and predominately US) studies that highlight excessive prevalence rates of hazardous alcohol consumption in this subgroup. Leichliter et al. (1998) assessed athlete status against quantity of alcohol consumed, and results indicated that respondents involved in organized institutional sports reported consuming significantly more drinks per week than nonsporting students. Furthermore, a greater percentage of athletes reported recently engaging in heavy episodic binge drinking (defined as five or more alcoholic beverages in one session) when compared with non-athletes. Similar trends were highlighted in other population studies (50–61% vs. 36–43%; Wechsler et al., 1997; Nelson and Wechsler, 2001; Ford, 2007a). Corroborative trends of alcohol use by those involved with sports participation were found outside of the USA, with Canadian drinkers found to be more active than non-drinkers and frequency of drinking was related to sports participation in sports in a curvilinear fashion (Kunz, 1997).

The impact of the sporting context on drinking

With the aim of informing the development of interventions, research has examined the possible underlying reasons for the excessive drinking patterns observed in student athletes. Sports psychologists were the first to suggest that the academic and athletic commitments student sportspeople encounter promote misuse of alcohol in order to cope with the stressors of balancing studies and sports (Stainback, 1997; Valentine...
<table>
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<tr>
<th>Authors</th>
<th>Focus area(s)</th>
<th>Study location</th>
<th>Sample</th>
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<th>Alcohol consumption measure</th>
<th>Key finding(s)</th>
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<tbody>
<tr>
<td>Andes et al. (2012)</td>
<td>Alcohol use; Negative consequences; Social norms</td>
<td>USA</td>
<td>Students (N = 442) (Varsity 7.8%) (Club 17.3%)</td>
<td>Questionnaire Response rate 27%</td>
<td>Number of drinks on last occasion; Number of high-risk (5+ drinks) occasions in last 2 weeks</td>
<td>• Positive relationship between intramural athlete status and personal alcohol use, perceptions of others’ alcohol use, and negative consequences (negative for varsity athletes).</td>
</tr>
<tr>
<td>Barber et al. (2001)</td>
<td>Activity involvement; Social identity</td>
<td>USA</td>
<td>Michigan Study of Adolescent Life Transitions (MSAL) (N = 900)</td>
<td>Longitudinal questionnaire;</td>
<td>Alcohol use in the last 6 months: (1 = \text{none} - 7 = 21+ \text{times})</td>
<td>• Participation in high school activities and group identity predicted later substance use, psychological adjustment, and educational and occupational outcomes.</td>
</tr>
<tr>
<td>Black et al. (1999)</td>
<td>Alcohol use; Non-elite sports</td>
<td>Australia</td>
<td>Non-elite males (N = 1613) 16–34yo</td>
<td>Questionnaire</td>
<td>Number of drinking occasions in last 7 days</td>
<td>• Predictors of excessive drinking (5+ drinks on one occasion)rugby league footballers, indoor cricketers, age, licensed club bar, smoking, country of birth.</td>
</tr>
<tr>
<td>Brenner and Swanik (2007)</td>
<td>Alcohol use; Seasonal factors; Sporting level; Sport-type differences</td>
<td>USA</td>
<td>NCAA student athletes (N = 720)</td>
<td>Questionnaire</td>
<td>Number of 5+ drinks in one occasion in the last 2 weeks</td>
<td>• Varying degrees of risk related to alcohol use.</td>
</tr>
<tr>
<td>Brenner et al. (2009)</td>
<td>Alcohol use; Campus connection</td>
<td>USA</td>
<td>NCAA student athletes (N = 720) Male 54%</td>
<td>Questionnaire</td>
<td>Frequency of heavy drinking (5+) in last 30 days; Frequency of intoxication in last 30 days</td>
<td>• Athletes engaged in high-risk drinking had higher level of campus connection but also report lower levels of campus involvement.</td>
</tr>
<tr>
<td>Cadigan et al. (2013)</td>
<td>Alcohol use, Athlete status transitions</td>
<td>USA</td>
<td>NCAA student athletes (N = 1590)</td>
<td>Longitudinal questionnaire</td>
<td>Frequency of heavy drinking (5+) in last 30 days; Frequency of intoxication in last 30 days</td>
<td>• More involved athletes less likely to exhibit high-risk drinking.</td>
</tr>
<tr>
<td>Chen et al. (2010)</td>
<td>Athletic identity; Social life; Sport participation</td>
<td>USA</td>
<td>Students (N = 275) (NCAA Division I athletes 59%) Male 62.5%</td>
<td>Questionnaire</td>
<td>Frequency of heavy drinking (5+) in last 30 days; Frequency of intoxication in last 30 days</td>
<td>• Individuals who transitioned out of athletically involvement had smaller increases to heavy drinking behaviours than individuals who transitioned into athlete involvement.</td>
</tr>
<tr>
<td>Clayton and Harris (2008)</td>
<td>Alcohol use; Social identities; Sports</td>
<td>UK</td>
<td>Students (male football players) (N = 13)</td>
<td>Ethnographic research</td>
<td>–</td>
<td>• Athletic identity positively associated with Core Benefits and Social Relationships attributes of athletic involvement.</td>
</tr>
<tr>
<td>Dams-O’Connor et al. (2007)</td>
<td>Alcohol use; Seasonal factors; Social norms</td>
<td>USA</td>
<td>NCAA student athletes (division I) (N = 228) Male 66% Age 19.31yo</td>
<td>Questionnaire Response rate 64%</td>
<td>Daily Drinking Questionnaire (DDQ; Collins et al. 1985)</td>
<td>• Team sports players higher ratings compared with those who played individual sports.</td>
</tr>
<tr>
<td>Doumas et al. (2007)</td>
<td>Alcohol use; Athlete vs. nonathlete; Seasonal factors</td>
<td>USA</td>
<td>Students (N = 455) (athletes 30%) Male 34% Age 18.5yo</td>
<td>Questionnaire</td>
<td>DDQ; Frequency of drunkenness</td>
<td>• Being able to drink, and engaging in collective bonding that facilitated this, a key marker to being accepted into the group and becoming identified as ‘one of the lads’.</td>
</tr>
<tr>
<td>Doumas and Haustveit (2008)</td>
<td>Intervention</td>
<td>USA</td>
<td>NCAA student athletes (division I) (N = 52) Male 58% Age 18.1yo</td>
<td>Web-based feedback</td>
<td>DDQ; Frequency of drinking to intoxication; Peak consumption; Frequency of binge drinking</td>
<td>• Typical athlete norm strongest predictor for personal alcohol uses, both in- and out-seasons.</td>
</tr>
</tbody>
</table>

**Table 1. Summary of the sport-alcohol literature with methodologies and key findings**
<table>
<thead>
<tr>
<th>Authors</th>
<th>Study Design</th>
<th>Location</th>
<th>Sample Description</th>
<th>Measures</th>
<th>Findings</th>
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</thead>
<tbody>
<tr>
<td>Doumas et al. (2010)</td>
<td>Intervention; RCT</td>
<td>USA</td>
<td>NCAA student athletes (division I) N = 113</td>
<td>Web-based feedback</td>
<td>Frequency of drinking to intoxication; Peak consumption</td>
</tr>
<tr>
<td>Ford (2007a)</td>
<td>Athlete vs. nonathletes; Binge drinking; Social norms;</td>
<td>USA</td>
<td>Students N = 12,109 (athletes 15%) Male 39%</td>
<td>Secondary data analysis</td>
<td>Y/N: binge drink in the last 2 weeks</td>
</tr>
<tr>
<td>Ford (2007b)</td>
<td>Binge drinking; Sport-type differences; Substance use</td>
<td>USA</td>
<td>Students N = 2316 Male 51.9%</td>
<td>Secondary data analysis</td>
<td>Y/N: binge drink in the last 2 weeks</td>
</tr>
<tr>
<td>Green et al. (2001)</td>
<td>Substance use</td>
<td>USA</td>
<td>NCAA student athletes N = 13,914 Male 66%</td>
<td>Questionnaire (NCAA study) Response rate 64.3%</td>
<td>Y/N: use in last 12 months</td>
</tr>
<tr>
<td>Grossbard et al. (2009a)</td>
<td>Athlete identity; Alcohol use; Alcohol-related consequences; Social norms</td>
<td>USA</td>
<td>Students transitioning to college NCAA I N = 1119 M 43.4% Age 17.97yo</td>
<td>Questionnaire Response rate 47%</td>
<td>DDQ</td>
</tr>
<tr>
<td>Grossbard et al. (2009b)</td>
<td>Alcohol-related consequences; Attraction to team; Social norms; Substance use</td>
<td>USA</td>
<td>NCAA student athletes (division I) N = 594 Male 43.6% Age 19.61yo</td>
<td>Questionnaire Response rate 93%</td>
<td>Drinks per month (typical number of drinks × number of drinking days)</td>
</tr>
<tr>
<td>Hildebrand et al. (2001)</td>
<td>Alcohol use; Athletic involvement</td>
<td>USA</td>
<td>Students N = 1287 (Current athletes 15.7%) (School athletes 59.6%) (Nonathlete 24.7%) Male 45%</td>
<td>Questionnaire</td>
<td>Semester score (freq. x typical number of drinks)</td>
</tr>
<tr>
<td>Hummer et al. (2009)</td>
<td>Alcohol use; Gender differences; Seasonal status; Social norms</td>
<td>USA</td>
<td>NCAA student athletes (division I) N = 610 Male 43.3% Age 19.57yo</td>
<td>Questionnaire Response rate 90%</td>
<td>Quantity (typical drinks); Frequency; Drinks per week; Frequency of binge</td>
</tr>
<tr>
<td>Kunz (1997)</td>
<td>Alcohol use; Socio-demographic factors</td>
<td>Canada</td>
<td>Population survey N = 39,305 Age &gt;20yo</td>
<td>Health population survey conducted 1990</td>
<td>Frequency of drinking</td>
</tr>
<tr>
<td>LaBrie et al. (2009)</td>
<td>Intervention</td>
<td>USA</td>
<td>Student athletes N = 660 Male 43.9%</td>
<td>Brief Live Interactive Normative Group intervention (BLING)</td>
<td>Quantity; Frequency; Drinks p/w; Peak consumption; Frequency of binge drinking</td>
</tr>
<tr>
<td>LaBrie et al. (2010)</td>
<td>Intervention</td>
<td>USA</td>
<td>Student athletes N = 524 Male 41.8% Age 19.5yo</td>
<td>Brief Live Interactive Normative Group intervention (BLING)</td>
<td>Quantity; Frequency; Drinks p/w; Peak consumption; Frequency of binge drinking</td>
</tr>
</tbody>
</table>

- Athletes randomly assigned to web-based feedback intervention reported significantly greater reduction in heavy drinking.
- Students involved with athletics significantly more likely to report binge drinking.
- Social norms mediating variable between athletic status and binge drinking.
- Gender differences: male athletes more likely to binge drink than female athletes.
- Significant difference in substance use across sport affiliation.
- Sub stance use varying between division levels (I < II < III).
- Division I attracts elite athlete more likely to abstain/more money to substance use education programs.
- Athlete identity moderated associations among gender, perceived norms, drinking and related consequences.
- Relationship between norms and personal alcohol use moderated by attraction to team.
- Positive relationship between perceived alcohol norms and drinking for male athletes and those with higher attraction to team—but fewer alcohol-related consequences.
- College students previously or currently involved in athletics consumed more alcohol, began drinking earlier and engaged in alcohol-related risk behaviours more frequently than students who had never been athletes.
- Perceived norms greater than personal attitudes to alcohol and alcohol use in predicting drinking (no gender differences).
- Curvilinear relation between frequency of drinking and frequency of participation in sport.
- One month post-intervention saw group norms, behaviour, attitudes, and alcohol-related consequences reduced. There were no subsequent changes from 1- to 2-month follow-up.
- Intervention was effective in immediately correcting normative misperceptions for students, Greek letter organization students and student athletes.

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<thead>
<tr>
<th>Authors</th>
<th>Focus area(s)</th>
<th>Study location</th>
<th>Sample</th>
<th>Method</th>
<th>Alcohol consumption measure</th>
<th>Key finding(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leichliter et al. (1998)</td>
<td>Alcohol use; Alcohol-related consequences; Binge drinking</td>
<td>USA</td>
<td>Students</td>
<td>Core Drug &amp; Alcohol Survey (CADS; Presley et al., 1994)</td>
<td>Number of drinks consumed per week; Frequency of binge drinking (5+ drinks)</td>
<td>• Number of drinks and frequency of binge drinking increased as level of involvement increased from nonparticipant to team member to leaders.</td>
</tr>
</tbody>
</table>
| Lewis and Paladino (2008) | Alcohol use; Social norms; Socio-demographic factors | USA            | NCAA student athletes (division I) | Alcohol and Other Drugs (AOD) survey (Thombs, 2000) | Quantity (typical drinks); Frequency                                                                 | • Only student-athlete norms demonstrated significant contribution to Q/F of alcohol consumption for self.  
• Signification socio-demographic contributors: gender, age of first drink, off-season drinking.  
• Different drinking and risk profile athlete leaders and nonleaders.  
• Age of onset of drinking behaviour was the strongest impact, above social norms.                                                                                                                                 |
| Lewis (2008)             | Alcohol use; Coaches’ attitudes; Risk perception; Social norms; Team leaders | USA            | Student athletes | AOD survey | Response rate ~80% | Quantity (typical drinks); Frequency; Frequency of binge drinking                                                                 |                                                                                                                                                                                                                                  |
| Lisha and Sussman (2010) | Review                               | –              | –      | Review                                           | Review                                                                                                                                                  | • In 22 of the 29 studies participation in sports was positively associated with alcohol.  
• Frequency of intoxication unaffected by sport competitive level.  
• Male gender strongly associated with weekly alcohol use, while greater number of females reported abstinence.  
• No difference in attitudes. Social-environmental factors and attitudes were related to alcohol use prior to the arrival at university.  
• Strength of individual motives in predicting negative alcohol-related consequences vary depending on context of consequence.                                                                                                                                 |
| Lorente et al. (2003)    | Alcohol use; Gender differences       | France         | University sports science students | Questionnaire response rate 88.5% | Frequency of intoxication in the last year; Frequency of consumption (beer, wine, spirits) |                                                                                                                                                                                                                                  |
| Marcello et al. (1989)   | Intervention                         | USA            | Student athletes | Substance Abuse Awareness & Prevention Program | Frequency of intoxication in the last year; Frequency of consumption (beer, wine, spirits) |                                                                                                                                                                                                                                  |
| Martens et al. (2003)    | Alcohol use; Alcohol-related consequences; Drinking motives | USA            | NCAA student athletes (division I) | CADS | Quantity (typical number of drinks per week); Frequency of binge drinking in last 2 weeks |                                                                                                                                                                                                                                  |
| Martens et al. (2006a)   | Review                               | –              | –      | Review                                           | Review                                                                                                                                                  | • High-risk drinking is particularly prevalent among student athletes. Further exploration of sport-related demographics and the sociocultural link between sport and alcohol is warranted.  
• Interaction effect indicated athletes norms demonstrated stronger relationship with personal alcohol consumption for male athletes; nonathlete norms stronger for female athletes.  
• Athlete-specific motives are important predictors of alcohol use and alcohol-related problems, but the use-problem relationship varies for different motivations.  
• Sport-type differences occurs (swimmers/divers highest across all alcohol consumption measures).  
• Social and enhancement motives partially mediated the relationship between sport-type and alcohol consumption.                                                                                                                                 |
<p>| Martens et al. (2006b)   | Alcohol use, Alcohol-related consequences; Social norms | USA            | NCAA student athletes (division I) | Questionnaire DDQ | Quality of life (n = 165) | Interaction effect indicated athletes norms demonstrated stronger relationship with personal alcohol consumption for male athletes; nonathlete norms stronger for female athletes.                                                                 |
| Martens et al. (2011)    | Alcohol-related consequences; Drinking motives | USA            | Student athletes | Questionnaire DDQ | Quality of life | Interaction effect indicated athletes norms demonstrated stronger relationship with personal alcohol consumption for male athletes; nonathlete norms stronger for female athletes.                                                                 |
| Martens et al. (2006c)   | Alcohol use; Drinking motives; Sport-type differences | USA            | NCAA student athletes (division I) | Questionnaire | Quality of life (n = 298) | Interaction effect indicated athletes norms demonstrated stronger relationship with personal alcohol consumption for male athletes; nonathlete norms stronger for female athletes.                                                                 |</p>
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<tr>
<th>Study (Year)</th>
<th>Type</th>
<th>Country</th>
<th>Sample Description</th>
<th>Methods</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Martens et al. (2010)</td>
<td>Intervention</td>
<td>USA</td>
<td>NCAA student athletes N = 263, Male 24%, Age 19.9yo</td>
<td>Personalized drinking feedback, DDQ, Peak BAC</td>
<td>• PDF condition reported lower drinking in 1 month follow-up, but N.S. in 6 months. PDF most effective on the heaviest drinking students.</td>
</tr>
<tr>
<td>Martha et al. (2009)</td>
<td>Binge drinking; Gender differences; Sport-type differences; Sporting level</td>
<td>France</td>
<td>University sports science students 2002: N = 380, male 57.6%, 2006: N = 313, male 56.2%, Age 20.5yo</td>
<td>Repeated cross-sectional survey Y/N: Drink-type in last month (beer, wine, spirits); 3+ times of episodic drinking in last 12 months</td>
<td>• Competitive sport participation in formal context (within a club/institution) for team sports related to repeated heavy episodic alcohol use in among men.</td>
</tr>
<tr>
<td>Martin (1998)</td>
<td>Alcohol use; Seasonal status; Sport-type differences</td>
<td>USA</td>
<td>NCAA female student athletes (division I) N = 371, Age 19.5yo</td>
<td>Multi-method: Questionnaires; Interviews (N=40)</td>
<td>• Drinking for social reasons most reported motivation for alcohol use.</td>
</tr>
<tr>
<td>Miller (2009)</td>
<td>Sport identity</td>
<td>USA</td>
<td>Student athletes N = 581, Male 56.8%, Age 19.92yo</td>
<td>Questionnaire response rate 53%</td>
<td>• Frequency of alcohol use and binge drinking decreased during competitive season and increased out of season.</td>
</tr>
<tr>
<td>Nativ and Puffer (1991)</td>
<td>Substance use</td>
<td>USA</td>
<td>Students N = 219 (athletes 49.8%)</td>
<td>The Lifestyle Assessment Questionnaire</td>
<td>• College athletes had a significantly higher proportion of risk lifestyle behaviours, included quantity of alcohol consumed.</td>
</tr>
<tr>
<td>Nativ et al. (1997)</td>
<td>Substance use (multi-centre study)</td>
<td>USA</td>
<td>NCAA student athletes N = 2240</td>
<td>The Lifestyle Assessment Questionnaire Response rate 75%</td>
<td>• College athletes had a significantly higher proportion of risk lifestyle behaviours, included quantity of alcohol consumed.</td>
</tr>
<tr>
<td>Nelson and Wechsler (2001)</td>
<td>Alcohol-related harms; Binge drinking</td>
<td>USA</td>
<td>Students N = 12,777 (athletes 17%), Male 54.1%</td>
<td>Public Health College Alcohol Study 1997 Response rate 60%</td>
<td>• Increase from 1991 study. Athletes reported more binge drinking, heavier alcohol use and greater number of drinking related harms than nonathletes.</td>
</tr>
<tr>
<td>O’Brien et al. (2007)</td>
<td>Alcohol use; Drinking motives; Sporting level</td>
<td>New Zealand</td>
<td>Sportspeople N = 1214 (student 54.3%), M 51.8%, Age 29.9yo</td>
<td>Questionnaire Response rate ~84%</td>
<td>• Curvilinear relationship between sporting level and drinking behaviour.</td>
</tr>
<tr>
<td>O’Brien et al. (2008)</td>
<td>Alcohol use; Drinking motives; Gender differences</td>
<td>New Zealand</td>
<td>Student athletes N = 631, Male 47.6%, Age 20.9yo</td>
<td>Questionnaire Response rate 94%</td>
<td>• Full mediation of positive reinforcement motives between team motives and AUDIT.</td>
</tr>
<tr>
<td>O’Brien et al. (2010)</td>
<td>Alcohol use; Drinking norms; Role models</td>
<td>Australia</td>
<td>Students N = 1028 (athletes 63.4%), Male 42%, Age 20.7yo</td>
<td>Questionnaire Response rate ~80%</td>
<td>• N.S. gender differences on AUDIT scores.</td>
</tr>
<tr>
<td>Olthuis et al. (2011)</td>
<td>Alcohol expectancies; Alcohol use; Injunctive norms</td>
<td>USA</td>
<td>Student athletes N = 301, Male 28.9%, Age 19.4yo</td>
<td>Questionnaire AUDIT</td>
<td>• Perceived high profile sportspeople’s drinking not predictive of sportspeople’s drinking.</td>
</tr>
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<td>Continued</td>
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</table>

- **PDF** condition reported lower drinking in 1 month follow-up, but N.S. in 6 months. PDF most effective on the heaviest drinking students.  
- Competitive sport participation in formal context (within a club/institution) for team sports related to repeated heavy episodic alcohol use in among men.  
- Practising an individual sport was protective factor against repeated heavy drinking for females.  
- Drinking for social reasons most reported motivation for alcohol use.  
- Frequency of alcohol use and binge drinking decreased during competitive season and increased out of season.  
- Strong athlete identity may buffer against health-risk behaviours, whereas a strong ‘jock’ identity may exacerbate risk.  
- College athletes had a significantly higher proportion of risk lifestyle behaviours, included quantity of alcohol consumed.  
- College athletes had a significantly higher proportion of risk lifestyle behaviours, included quantity of alcohol consumed.  
- Increase from 1991 study. Athletes reported more binge drinking, heavier alcohol use and greater number of drinking related harms than nonathletes.  
- Alcohol consumption appears to have a causative effect on sport-related injury, and negatively impacts on performance.  
- Curvilinear relationship between sporting level and drinking behaviour.  
- Full mediation of positive reinforcement motives between team motives and AUDIT.  
- N.S. gender differences on AUDIT scores.  
- Gender differences in drinking motives: coping motives significant predictor for hazardous alcohol use for female athletes only.  
- Perceived high profile sportspeople’s drinking not predictive of sportspeople’s drinking.  
- Association between perceived teammate, coach and parent approval of alcohol use and own consumption.  
- Negative expectancy valuations mediated the association between teammate approval and alcohol use.
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<th>Authors</th>
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<th>Key finding(s)</th>
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<tr>
<td>Overman and Terry (1991)</td>
<td>Alcohol use; Attitudes</td>
<td>USA Students</td>
<td>N = 146</td>
<td>Questionnaire</td>
<td></td>
<td>• No differences between athlete and non-athlete college students in drinking or in attitudes towards drinking.</td>
</tr>
<tr>
<td>Partington et al. (2012)</td>
<td>Alcohol use; Alcohol-related harms;</td>
<td>UK University</td>
<td>N = 770 (athletes 23.5%) Male 38.8% Age 22yo (median)</td>
<td>Questionnaire</td>
<td>AUDIT</td>
<td>• University sports members report higher alcohol use and more at-risk for alcohol-related harm than nonsporting students.</td>
</tr>
<tr>
<td>Perkins and Craig (2006)</td>
<td>Sport-type differences</td>
<td>USA Student</td>
<td>N = 414 (T2: N = 373; T3: N = 353)</td>
<td>Pre/post-test alcohol education intervention</td>
<td>Quantity/frequency;</td>
<td>• Team sports players report higher alcohol use than individual sports players.</td>
</tr>
<tr>
<td>Rockafellow and Saules (2006)</td>
<td>Intervention</td>
<td>USA Student</td>
<td>N = 218 (athlete 37%) Male 36% Age 21.1yo</td>
<td>Questionnaire</td>
<td>Quantity/frequency in past month</td>
<td>• Intervention substantially reduced perceptions of alcohol use, personal consumption and negative alcohol consequences.</td>
</tr>
<tr>
<td>Selby et al. (1990)</td>
<td>Substance use</td>
<td>USA Student</td>
<td>N = 247</td>
<td>Questionnaire</td>
<td>Quantity/frequency in past year</td>
<td>• Alcohol most frequently used substance, although this tended to decrease during competitive season.</td>
</tr>
<tr>
<td>Tewsksbury et al. (2008)</td>
<td>Athletes vs. non-athletes; Binge drinking;</td>
<td>USA Students</td>
<td>N = 639 (athlete 16.9%) Male 38.4% Age 21yo</td>
<td>Questionnaire</td>
<td>Y/N: Binge drinking in last 2 weeks</td>
<td>• Binge drinking among college athletes predicted by gender, drinking in bars, number of male friends who drink, on-campus residency, and smoking</td>
</tr>
<tr>
<td>Thombs (2000)</td>
<td>Alcohol use; Seasonal status; Social norms</td>
<td>NCAA student athletes (division I)</td>
<td>N = 297 Male 58.9% Age 20yo (modal)</td>
<td>Questionnaire Response rate 83%</td>
<td>In last 12 months… Frequency/Quantity; Frequency of binge drinking; Frequency of drunkenness</td>
<td>• Perceived norm of teammate no different to perceived norm of general student body when associated with athlete personal drinking.</td>
</tr>
<tr>
<td>Thombs and Hamilton (2002)</td>
<td>Intervention</td>
<td>NCAA student athletes (division I)</td>
<td>N = 817</td>
<td>Social norms campaign exposure intervention</td>
<td>Number of drinks in last 2 weeks; Heavy drinking (4+/5+ drinks) in the last 2 weeks</td>
<td>• Heavier drinking behaviour seen in athletes explained to a greater extent by age of onset of regular drinking.</td>
</tr>
<tr>
<td>Turrisi et al. (2006)</td>
<td>Review</td>
<td>–</td>
<td></td>
<td>Review</td>
<td></td>
<td>• Campaign reduced norm perceptions of peer drinking, however this was not reflected in personal drinking behaviour.</td>
</tr>
<tr>
<td>Turrisi et al. (2007)</td>
<td>Alcohol use; Mediational influences;</td>
<td>USA Students</td>
<td>N = 835 (athletes 24.4%) Male 36.5% Age 18.8yo</td>
<td>Questionnaire</td>
<td>Frequency of drunkenness in last 2 months; Frequency of binge drinking in last 2 weeks; Max number of drinks (open-ended)</td>
<td>• Within the general student population, members of Greek letter social organizations and sports clubs were more likely to engage in high-risk drinking.</td>
</tr>
<tr>
<td>Ward and Gryczynski (2007)</td>
<td>Alcohol use; Recreational sports</td>
<td>USA Student</td>
<td>N = 494 Male 45.6% Age 21.3yo</td>
<td>Questionnaire (secondary data analysis) Response rate 55%</td>
<td>Heavy drinking (4+/5+ drinks) in the last 2 weeks</td>
<td>• Peer norms, environmental influences, and parental communication were all significant mediators of athlete-drinking relationship.</td>
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<td></td>
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<td>• Students participating in organized sport (non-NCCA) used alcohol at a great intensity than those not involve with recreational sport.</td>
</tr>
<tr>
<td>Study Reference</td>
<td>Research Focus</td>
<td>Country</td>
<td>Participants</td>
<td>Methodology</td>
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<tr>
<td>Wechsler et al. (1997)</td>
<td>Athletic involvement; Substance use</td>
<td>USA</td>
<td>Students (N = 17,251) (Partial involvement 22.5%; male 55.2%) (Athletes 12.1%; male 62.1%)</td>
<td>National Sample Questionnaire</td>
<td>Frequency of recent binge drinking (4+/5+ drinks), but less likely engage in smoking and illicit drug use.</td>
<td></td>
</tr>
<tr>
<td>Williams et al. (2008)</td>
<td>Alcohol use; Social Ecology Model</td>
<td>USA</td>
<td>NCAA student athletes (division I) (N = 230)</td>
<td>Questionnaire</td>
<td>Quantity (typical number of drinks per week); Frequency of drinking per week</td>
<td></td>
</tr>
<tr>
<td>Wilson et al. (2004)</td>
<td>Alcohol use; Athlete vs. nonathlete; Drinking motives; Gender differences</td>
<td>USA</td>
<td>Students (N = 218) (athletes 29.8%; male 42.2%); Age 19.7yo</td>
<td>Questionnaire</td>
<td>Frequency of drinking per week; Frequency of drinking to intoxication</td>
<td></td>
</tr>
<tr>
<td>Yusko et al. (2008a)</td>
<td>Substance use; Athletes vs. nonathletes; Seasonal status; Gender differences</td>
<td>USA</td>
<td>Students (N = 896) (NCAA athletes 43.8%; Male 46.7%); Age 20.8yo</td>
<td>Questionnaire</td>
<td>Frequency of heavy episodic drinking (4+/5+ drinks) in past year</td>
<td></td>
</tr>
<tr>
<td>Yusko et al. (2008b)</td>
<td>Alcohol use; Athletes vs. nonathletes; Alcohol-related harms</td>
<td>USA</td>
<td>Students (N = 896) (NCAA athletes 43.8%); Male 46.7%; Age 20.0yo</td>
<td>Questionnaire</td>
<td>Frequency of heavy episodic drinking (4+/5+ drinks) in past month</td>
<td></td>
</tr>
<tr>
<td>Zamboanga and Ham (2008)</td>
<td>Alcohol expectancies; Subjective evaluations; Alcohol use</td>
<td>USA</td>
<td>Female student athletes (N = 145)</td>
<td>Questionnaire</td>
<td>Frequency of heavy episodic drinking (4+/5+ drinks) in past month</td>
<td></td>
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<tr>
<td>Zamboanga et al. (2005)</td>
<td>Alcohol expectancies; Drinking games (DG); Drinking motives</td>
<td>USA</td>
<td>Female student athletes (N = 143)</td>
<td>Questionnaire</td>
<td>Frequency of heavy episodic drinking (4+/5+ drinks) in past month</td>
<td></td>
</tr>
<tr>
<td>Zamboanga et al. (2006)</td>
<td>Alcohol expectancies; Alcohol use</td>
<td>USA</td>
<td>Female student athletes (N = 85)</td>
<td>Questionnaire</td>
<td>AUDIT</td>
<td></td>
</tr>
<tr>
<td>Zamboanga et al. (2008)</td>
<td>Alcohol use; Cohesion; Drinking games (DG); Sport-type differences</td>
<td>USA</td>
<td>NCAA female student athletes (division III) (N = 176)</td>
<td>Questionnaire</td>
<td>AUDIT</td>
<td></td>
</tr>
<tr>
<td>Zhou et al. (2014)</td>
<td>Alcohol use; Cohesion; Sporting identity</td>
<td>UK</td>
<td>Student athletes (N = 243)</td>
<td>Questionnaire</td>
<td>AUDIT</td>
<td></td>
</tr>
</tbody>
</table>

The table provides a descriptive summary of all the studies included for qualitative review. NB: Missing descriptive details reflect data not provided in published paper. yo, years old.
and Taub, 1999). Prior research indicated that athletes may endorse a ‘work hard, play hard’ ethic (Leichliter et al., 1998, p. 261) and authors suggest that alcohol use is often sanctioned among athletes as an acceptable coping mechanism and a way of relieving tension (Lisha and Sussman, 2010).

A handful of studies have examined the relationship between sport-related stress and excessive alcohol consumption; however, these provide only minimal support for this explanation. After controlling for other predictors of alcohol use, social and enhancement motives were the strongest predictors for hazardous alcohol use among student sportspeople (Martens et al., 2006c; O’Brien et al., 2008). Moreover, coping motives seem to be most strongly related to greater experiences of negative alcohol-related consequences rather than being a predictor of alcohol consumption itself (Martens et al., 2003; Yusko et al., 2008a). This suggests that while harmful experiences may arise due to using alcohol to cope with stress, such motivations are not necessarily the primary reason for drinking in the first place. Finally, when compared with general student samples, similar levels of coping-related drinking motives were reported by student athletes (Martens et al., 2005). Thus, despite the reasonable suggestion that sportspeople drink to cope with the unique factors of the student-athlete environment, findings indicate that sport-related coping motives alone do not adequately explain the heavy drinking prevalence among student sportspeople.

While the larger national studies conducted in the USA generally highlight elevated rates of hazardous alcohol use among student athletes, some of the reports indicate that drinking levels vary between sports. Research sourced from the NCAA in America found that swimmers/divers reported heavier episodic drinking in comparison to other sports (Green et al., 2001; Martens et al., 2006c); a somewhat surprising result as sports literature often refers to the traditional team sports, such as football, as more typical settings associated with sport-related drinking (Stainback, 1997). However, a recent study performed outside of the USA suggested that those participating in team sports (e.g. soccer, rugby) reported significantly higher hazardous drinking than those involved in individual sports (e.g. swimming, racquet sports; Partington et al., 2012). The authors suggested that the cultural differences between university sports in the USA compared with other countries may be the reason for disparities between their findings and earlier work.

Research carried out in New Zealand identified a more curvilinear relationship between sporting level and hazardous drinking. Those participating at the highest (national/international) and lowest (social/recreational) levels reported lower levels of alcohol use compared with sportspeople involved in more organized and regulated activities (e.g. state/county levels; O’Brien et al., 2007). These trends add weight to the idea that as sportspeople begin to compete at higher levels with a greater emphasis on performance, less engagement in health-risk behaviours such excessive alcohol consumption will be observed (Andes et al., 2012). The diminished reports of alcohol use at the lower levels of sport participation suggest that an element of sporting investment may also be a mediating factor between athletic status and drinking.

Finally, a preponderance of literature has identified that alcohol consumption is particularly elevated during the athletic off-season (Selby et al., 1990; Martin, 1998; Thombs, 2000; Doumas et al., 2007; Yusko et al., 2008b; Hummer et al., 2009). Female athletes questioned by Martin (1998) indicated that the most dominant reason for lower drinking/abstinence was the detrimental effects alcohol has on sporting performance, which suggests that the lower consumption rates of alcohol during competitive season may be motivated by performance-related concerns and athletic commitment. However, the majority of these studies use NCAA athletes as their sample, again highlighting the concentrated literature emanating from US research based predominately on elite-level college athletes. This limitation raises questions about whether the drinking behaviours identified in these research programmes can be generalized to young sportspeople who do not participate in NCAA affiliated sports.

Theoretical underpinnings

A known predictor of alcohol use in students are normative beliefs that are conducive to excessive consumption (Perkins et al., 1999; Borsari and Carey, 2001), and social norms theory underpins the bulk of the investigations relevant to college and university contexts (Perkins, 2002; see Table 2 for a breakdown of studies by focus areas). Similar to the student population in general, research with student athletes indicated those involved in sports groups tend to perceive that their teammates consume more alcohol than themselves (Thombs, 2000). When compared with nonathletes, athletes were found to report higher perceptions of peer drinking, as well as higher peer approval of drinking which, in turn, was related to heavy drinking (Turrisi et al., 2007; Hummer et al., 2009). Moreover, misperceptions of sporting friends’ drinking norms appear to have the greatest influence on sportspeople’s own alcohol consumption over any other reference group (Martens et al., 2006b; Dams-O’Connor et al., 2007; Lewis and Paladino, 2008). Sporting groups are suggested to be particularly peer-intensive and insular, where the salience of one’s own sports team and fellow teammates is constantly accentuated due to the frequency of playing and training together (Thombs, 2000). As a result, Martens et al. (2006b) suggested the impact of perceived norms in shaping one’s own behaviour is particularly strong for sportspeople given the salience and relevance of their sports group. However, a recurrent limitation of such research is the lack of causal inferences that can be drawn from data as the predominant ‘snap-shot’ cross-sectional designs cannot explicitly test whether social norms determine alcohol use, and the data do not allow conclusions regarding cause or mediation direction. As a consequence there have been calls for longitudinal designs (Martens et al., 2006b; Oltuis et al., 2011; Zhou et al., 2014) in order to establish directional relationships between drinking factors to better inform drink-reducing interventions.

Building on the social norms approach, the most frequently utilized drink-reducing interventions in this domain to date are educational-based. Such interventions seek to change misconceptions of peer drinking norms by highlighting actual norms in an attempt to correct exaggerated beliefs (c.f. Perkins and Berkowitz, 1986). However, applying this approach to strategies aimed at reducing hazardous drinking in sportspeople has produced mixed results (Thombs and Hamilton, 2002; Perkins and Craig, 2006). Limitations of such studies include lack of appropriate comparison group (Perkins and Craig, 2006), well-documented issues concerning self-reports (Martens et al., 2006b), and the uncertainties around identifying what kind of normative information is most effective (Thombs and
Focus area | Authors
--- | ---
Attitudes (n = 1) | Overman and Terry (1991)
Alcohol expectancies (n = 4) | Oltshuis et al. (2011), Zamboanga and Ham (2008) and Zamboanga et al. (2005, 2006)
Alcohol-related harms (n = 7) | Nelson and Wechsler (2001), Partington et al. (2012) and Yuskos et al. (2008b)
Athlete vs. non-athlete (n = 9) | Cadigan et al. (2013), Doumas et al. (2007), Ford (2007a), Hildebrand et al. (2001), Tewksbury et al. (2008), Wechsler et al. (1997), Wilson et al. (2004) and Yuskos et al. (2008a,b)
Binge drinking (n = 6) | Ford (2007a,b), Leichliter et al. (1998), Martha et al. (2009), Nelson and Wechsler (2001) and Tewksbury et al. (2008)
Cohesion (n = 2) | Zamboanga et al. (2008) and Zhou et al. (2014)
Gender differences (n = 6) | Hummer et al. (2009), Lorente et al. (2003), Martha et al. (2009), O’Brien et al. (2008), Wilson et al. (2004) and Yuskos et al. (2008a)
Identity (n = 7) | Barber et al. (2001), Chen et al. (2010), Clayton and Harris (2008), Grossbard et al. (2009a,b), Miller (2009) and Zhou et al. (2014)
Interpersonal influences (e.g., coaches, parents) (n = 5) | Brenner et al. (2009), Chen et al. (2010), Lewis (2008), O’Brien et al. (2010) and Turrisi et al. (2007)
Reviews (n = 4) | Lisha and Sussman (2010), Martens et al. (2006a) and O’Brien and Lyons (2000)
Seasonal status (n = 7) | Brenner and Swanik (2007), Dams-O’Connor et al. (2007), Doumas et al. (2007), Hummer et al. (2009), Martin (1998), Thombs (2000) and Yuskos et al. (2008a)
Self-Determination Theory (SDT) (n = 1) | Rockafellow and Saules (2006)
Social Ecology Model (n = 1) | Williams et al. (2008)
Social life (n = 2) | Brenner et al. (2009) and Chen et al. (2010)
Socio-demographic factors (n = 2) | Kunz (1997) and Lewis and Paladino (2008)
Sporting level (n = 3) | Black et al. (1999), Brenner and Swanik (2007), Martha et al. (2009), O’Brien et al. (2007) and Ward and Gryczynski (2007)
Sport-type differences (n = 7) | Brenner and Swanik (2007), Ford (2007b), Martens et al. (2006b), Martha et al. (2009), Martin (1998), Partington et al. (2012) and Zamboanga et al. (2008)
Subjective evaluations (n = 2) | Zamboanga and Ham (2008) and Zamboanga et al. (2005)
Substance use (including drugs, tobacco) (n = 5) | Ford (2007b), Green et al. (2001), Grossbard et al. (2009b), Nattiv and Puffer (1991), Nattiv et al. (1997), Rockafellow and Saules (2006), Seby et al. (1990), Wechsler et al. (1997) and Yuskos et al. (2008a)

Hamilton, 2002). More recent techniques have utilized interactive technology to provide immediate normative data with the aim of reducing individual misperceptions (LaBrie et al., 2009, 2010). The novelty of such interventions is that the environment in which it is implemented utilizes the salience and proximity of the athletic group—the students engage with the technology within a group setting of same-sex athletes—by presenting data specifically applicable to the sports group. Personalized feedback has been found to be more successful than general feedback, or basic alcohol education programmes (Doumas and Haustveit, 2008; Doumas et al., 2010; Martens et al., 2010). Therefore, social norms-based interventions seem to be most effective when using fellow student athletes or ‘typical sportspeople’, rather than ‘general student’ or ‘friend’ as a reference group (Dams-O’Connor et al., 2007). Interpretation of such research points to the importance for receiving relevant group-specific information in order to modify behaviours via normative influences.

Alcohol research has often used alcohol expectancies to provide a theoretical framework for understanding the relationship between environmental influences, cognitive drives and drinking behaviours. Alcohol outcome expectancy approaches are based on a social learning perspective that suggests individuals drink due to learned expectations of the effects of alcohol use, and that these expectancies drive consumption (Jones et al., 2001). Studies showed that sportspeople’s alcohol expectancies predicted heavy drinking and alcohol-related behaviours, such as involvement in drinking games (Zamboanga et al., 2005; Zamboanga and Ham, 2008), with positive expectancies accounting for a larger proportion of the variance than negative expectancies (Zamboanga et al., 2006). It is interesting to note that despite reporting experiencing greater alcohol-related harms, female sportspeople in this research tend to hold more positive alcohol expectations. The discussions from these studies suggested the negative outcomes of drinking may not actually be viewed as negative by sportspeople as expectancies in this environment may have different context-dependant meanings (O’Hare, 1997; Zamboanga et al., 2006; Zamboanga and Ham, 2008). For instance, the motivation to socialize and integrate with their teammates could create contexts where negative outcomes may be desirable due to the normative drinking practices of the group. From this perspective it is important to consider the meaning and values student sportspeople attach to sport-associated drinking, and their role in shaping individuals’ drinking behaviours in more detail (Oltshuis et al., 2011).

It has been noted that team-associated motives and positively reinforced outcomes are among the strongest predictors of sportspeople’s alcohol consumption (Martens et al., 2005; O’Brien et al., 2007). However, research regarding social and team-related motives is sparse considering the general supposition that drinking is often a socially oriented activity (Gordon et al., 2012). Our literature search uncovered only a few studies that assessed social/team motives for engagement in alcohol use and which generally surmise that drinking is viewed by sportspeople as important for encouraging team cohesion (Zhou et al., 2014) and that social and enhancement...
drinking motives are particular important predictors of engagement in alcohol behaviours (O’Brien et al., 2008). Authors have thus identified a need for further research into team-related factors in the contexts of sportpeople’s drinking (Martens et al., 2006a), and an examination of the relationship between group-level motivations for drinking and alcohol consumption is warranted.

Research examining the influence of social groups on individual behaviour suggested closest reference groups (e.g. close friend, teammate) can exert a powerful influence on personal alcohol consumption (Baer et al., 1991; Dams-O’Connor et al., 2007; Neighbors et al., 2008), and that identification with the reference group can play a crucial moderating influence on individuals’ own drinking behaviour (Neighbors et al., 2008; Livingstone et al., 2011). Perceptions of athlete-specific drinking norms may be more salient, or viewed as more important, by those who more readily identify themselves in terms of their athletic status. This identification as an athlete has been shown to moderate the effect of normative perceptions of athlete drinking on personal alcohol use, where those that report higher levels of athlete identity and greater team connectedness demonstrated a stronger positive association between norms and individual drinking (Grossbard et al., 2009a,b). Social groups such as sports teams are often characterized by a strong group identity (Brewer et al., 1993) and, in light of the emergent literature, the role of identity warrants further exploration when examining the drinking behaviours of its members. Consequently, authors have recommended future research to measure the importance of identity in the context of the group, and how group identification may act as a mediator/moderator between norms and health behaviours (Grossbard et al., 2009b; Zhou et al., 2014).

What is missing? Unanswered questions and future direction

Although those engaged in sports exhibit greater prevalence of hazardous alcohol use, they were also found to continually report holding positive alcohol expectancies, high levels of sporting identification and often report higher psychosocial well-being (Barber et al., 2001; Zamboanga et al., 2006; Zhou et al., 2014). Interestingly, although student athletes report significantly greater frequency of heavy episodic drinking than their non-athletic peers, both groups report similar levels of hazardous alcohol use, they were also found to continually report holding positive alcohol expectancies, high levels of athlete identity and greater team connectedness demonstrated a stronger positive association between norms and individual drinking (Grossbard et al., 2009a,b). Social groups such as sports teams are often characterized by a strong group identity (Brewer et al., 1993) and, in light of the emergent literature, the role of identity warrants further exploration when examining the drinking behaviours of its members. Consequently, authors have recommended future research to measure the importance of identity in the context of the group, and how group identification may act as a mediator/moderator between norms and health behaviours (Grossbard et al., 2009b; Zhou et al., 2014).

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Although those engaged in sports exhibit greater prevalence of hazardous alcohol use, they were also found to continually report holding positive alcohol expectancies, high levels of sporting identification and often report higher psychosocial well-being (Barber et al., 2001; Zamboanga et al., 2006; Zhou et al., 2014). Interestingly, although student athletes report significantly greater frequency of heavy episodic drinking than their non-athletic peers, both groups report similar levels of alcohol-related problems (Yusko et al., 2008a). It is suggested that the connectedness among sportpeople promotes social support among sports club members, and that this may act as a protective factor to limit experiences of negative alcohol-related consequences (Grossbard et al., 2009b). Such findings indicate there may be positive outcomes of sport participation and experiences of alcohol-related outcomes that have an influence on the drinking behaviours which have been overlooked to date.

As outlined, previous strategies for reducing drinking in the current, and similar, population typically engage with the social norms approach (Perkins and Craig, 2006; LaBrie et al., 2010). However, the norms approach emphasizes group norms as negatively imposed influences with its emphasis on conformity to achieve social acceptance (c.f. Asch, 1951). Thus failure to use alcohol in-line with social norms may result in social censure from peers (Ford, 2007a). What is missing is research that examines individuals’ engagement in normative behaviours as a facilitator for creating feelings of self-worth and sociality, i.e. not chiefly due to a fear of condemnation from others (c.f. Cialdini and Goldstein, 2004). Studies that have assessed conformity as a motive to engage in drinking tend to find that this is not a significant predictor of, or negatively associated with, alcohol use (O’Brien et al., 2008; Hummer et al., 2009). Future research would be astute to investigate the motives for drinking, both positive and negative, and the role that alcohol plays in shaping the social lives of sportsperson.

Research into health behaviours has begun to explore the identity-behaviour link, and there is now an increased emphasis on the influence of group norms whereby engaging in the behaviours carries positive inferences for group inclusion (Oyserman et al., 2007). This perspective moves away from theories such as social norms by suggesting that health behaviours are promoted by in-group characteristics and a shared identity which bridges social and contextual influences, and individual behaviour (Haslam et al., 2009). Our review of the literature highlights the emerging importance of the sports groups and group-level influences on personal alcohol consumption. In this way the existence of sports groups appears to lend itself to an emergent social identity perspective (Tajfel and Turner, 1979; Turner, 1985) where identification with the group may serve as a driver for individual behaviours.

Social identity has already been adopted in research focused on sport fandom where indirect sports participation, such as supporting a team and belonging to its fan club, is suggested as an avenue for improving social and psychological health (Wann, 2006). The connectedness between sports fans of the same group is suggested to provide the social support beliefs that contribute to well-being (Wann et al., 2001); thus there may be avenues for promoting identity-related well-being that could protect against alcohol-related harms. For example, social psychologists now espouse a shift in focus to the importance of our social groups and how social networks can enhance resilience, coping, and both mental and physical well-being (c.f. Jetten et al., 2012). In a similar vein, social identity may be a mechanism through which behavioural and psychological features arise for those directly participating in sport and it is this sense of identification that can impact on behaviours and attitudes, including pro-social behaviour (Platow et al., 1999). Subsequently, we may be able to utilize such processes in order to develop strategies for alcohol-misuse interventions for this subgroup. Recent research investigating alcohol-fuelled violence in the night time economy found that groups can regulate individuals’ behaviour by intervening if behaviours run counter to group norms, or may tarnish group identity (Levine et al., 2009b). Subsequently, we may be able to utilize such processes in order to develop strategies for alcohol-misuse interventions for this subgroup. Recent research investigating alcohol-fuelled violence in the night time economy found that groups can regulate individuals’ behaviour by intervening if behaviours run counter to group norms, or may tarnish group identity (Levine et al., 2009b). Although not previously applied to alcohol consumption itself, this work highlights the possibility that behaviours associated with excessive alcohol consumption may potentially be harnessed or exacerbated through group regulation and identity.

Finally, an observed constraint to the current literature is the concentrated body of research performed primarily in the USA (n = 52) which may not be applicable to practices of sports and drinking outside of the USA. There are, for example, differences between university sports and sporting participation in the USA compared with European countries, for example. Specifically, sport is more integrated with education in the USA—where well-funded and organized high school and collegiate sports scholarship and athletic programmes the norm in the USA. US College (university-level) sport has particular prestige, and can be more popular than its professional counterparts.
However, in comparison with the USA, student sport in other countries has a relatively low profile (Houlihan, 1997). With this in mind, a paucity in non-US-based investigations has been lamented (Partington et al., 2012; Zhou et al., 2014) and further investigation in different cultural settings is warranted. Examination of different sports-related alcohol contexts/cultures, from this perspective, could contribute to facilitating a more parsimonious understanding of how alcohol consumption is shaped by socio-cultural forces more broadly.

In conclusion, problematic drinking levels of student sportspeople have been substantiated in research conducted over the past three decades, with findings consistently demonstrating that those participating in sport report engaging in more hazardous alcohol behaviours. The reviewed literature indicates that social and team-oriented motives may be the central influences that promote drinking in this particular subgroup. However, this review has identified a need for research and theoretical contributions to elucidate the psychological and social processes underpinning the link between these influences and alcohol consumption. A better understanding of how social/group dynamics shape alcohol behaviours may well pave the way for the development of effective interventions that can positively impact alcohol consumption—and potentially beyond the sport settings that were the focus of this review.

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