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Review

The association between sports participation, alcohol use and aggression and violence: A systematic review

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ABSTRACT

Objectives: To review the current research on alcohol-related violence and sports participation.
Methods: The Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines were used to identify relevant studies for inclusion. A search of six databases (EBSCOhost) was conducted.
Results: A total of 6890 studies were identified in the initial search. Of these, 11 studies met the inclusion criteria. The majority of the studies were from the US ($n = 10$) and focused on collegiate athletes ($n = 7$), adolescents ($n = 3$), professional/former professional athletes ($n = 1$).
Conclusion: The reviewed research indicates higher rates of alcohol use and violence in athlete populations when compared against non-athlete populations. Masculinity, violent social identity and antisocial norms connected to certain sports stand out as potential factors that may impact the association between sport and violence in athlete populations.

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1. Introduction

While some studies have emphasised sport participation as a possible protective factor against excessive alcohol and other substance use,^{1–3} the vast majority of research shows that sport participation, and particularly participation in team sports, is associated with increased rates of hazardous drinking.^{4–8} Surprisingly, there has been very little work examining the relationship between alcohol consumption and associated harms – such as accident, violence and health problems – in sporting populations. Most of this research focuses on US collegiate samples,^{4,5,9} and shows that excessive alcohol consumption is associated with a variety of consequences, including, for example, unprotected sex, violence and drink driving.⁴ Much less is known about alcohol-related aggression and violence in athletes, despite anecdotal reports suggesting higher rates of alcohol-related aggression in sports populations. The aim of the present study was to review the existing evidence base on alcohol-related violence and aggression in sport participants.

While there is some contention in this matter, scholars have suggested that the masculine/macho norms and confrontational nature of some sports attracts and/or socialises aggression in those

who participate.^{10,11} A recent review of general aggression in sport highlighted the high prevalence of on-field violence, but also found that research on off-field violence and antisocial behaviour was sparse.¹² There is, however, some evidence suggesting that participants involved in US collegiate sport and sport-orientated fraternities are more likely to be involved in sexual assaults.¹³ In a multi-university US study,¹⁴ athletes were found to be involved in 19% of all reported sexual assaults on campuses, yet they constituted only 3% of these university populations. In another study of US college athletes, 14% of male team leaders and 11% of team members reported taking advantage of someone sexually as a result of their own substance use, compared to 7.7% of males who did not participate in sports.⁴ Hence there appears to be some connection between sports participation, alcohol use and violence.

Several studies have linked team sport athletes (e.g. football, rugby and soccer) with higher levels of alcohol consumption than individual sports athletes (e.g. track and athletics).^{15,16} This connection is likely due to the fact that drinking at a club or collegiate level is very much centred on team socialising and bonding,¹⁵ and further that such events often occur at a favourite bar or licensed clubhouse.^{17,18}

The difference in alcohol consumption between participants in team and individual sports, however, is not consistent across sports. For example, Ford¹⁹ found that while ice hockey and soccer players reported higher levels of alcohol consumption than any other sports participants, athletes in other team-based sports such

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as basketball and track reported low levels of consumption. Therefore, the relationship between team sport participation and alcohol use appears to be contingent, to a degree, on type of sport or other contextual factors. This is likely to do with alcohol cultures, norms and expectations that are specific to certain sports, clubs and teams.¹⁵

In addition, it is common for microbreweries and bars to sponsor local teams, and larger breweries and alcohol brands to support professional sports.²⁰ This relationship between alcohol suppliers and sports clubs is often emphasised as many community sports clubs (which are typically run by volunteers and not-for-profit organisations) rely on alcohol sales to raise revenue.²⁰ Accordingly, alcohol and sport are inextricably linked in terms of the social norms and cultures associated with sports, as well as in those of the alcohol industry which funds a variety of sports clubs.

The pervasiveness of alcohol-related violence has been documented in a broad range of studies that have demonstrated links between alcohol consumption and: public violence,^{21–23} sex crimes,^{24–26} and domestic violence.^{27–29} Further, the relationship between alcohol and violence has been documented with reference to many types of violence and in numerous countries. For example, the World Health Organisation³⁰ has estimated that: 80% of juvenile violence in Estonia is associated with alcohol; 33% of perpetrators of domestic violence in Switzerland are intoxicated; and 46% of rapes in Spain are committed by persons under the influence of alcohol.³¹ In Australia, approximately 25% of the population experience alcohol-related verbal abuse annually, 13% feel threatened by an intoxicated person, and 4.5% of those over 14 years of age are physically abused by someone under the influence.³² Thus, the relationship between alcohol and violence appears to cross cultural and national divides.

Given the available evidence, the connections between alcohol and violence,^{21–32} and between alcohol and sports populations^{15–20} appear to be relatively strong. As noted above, sports participation may, in some instances, accentuate the relationship between alcohol and violence. Nonetheless, there is scant research directed specifically at alcohol-related violence in the sport context. Against this backdrop, the current review will examine the literature on the association between alcohol and violence in the sport context to clarify the relationships between sport participation, alcohol and violence. Further, the question of whether sport participation in some way moderates the relationship between alcohol and violence, will also be examined.

2. Methods

The review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, which can be accessed at www.prisma-guidelines.org. This format of systematic review has been widely used and is accepted as a valid approach.³⁶

A comprehensive search of the following databases was conducted: Academic Search Premier; CINAHL with Full Text; EJS E-Journals; MasterFILE Premier; MEDLINE with Full Text; PsycARTICLES; Psychology and Behavioral Sciences Collection.

The search subject terms used were based on MeSH keywords, and included: (1) alcohol and sport/sports club/athlete and violence/aggression/assault; (2) sports and violence and drinking culture/cultural norms. Reference lists of relevant papers were also manually searched for additional citations.

Studies were selected based on the following inclusion criteria:

- i. The population under study was associated with sports (e.g. professional, university or amateur athletes, sports club/team

officials), or used to draw conclusions about sports-connected populations.

- ii. The study topic and/or conclusions centred on alcohol use, violence/aggression and sport.
- iii. The full text of the study was available in English.
- iv. The quality of the article was approved using the Critical Appraisal Skills Program (CASP).
- v. The study was published in a peer-reviewed scientific journal.

Articles obtained from the search results were assessed by the researchers on the basis of the inclusion criteria, and as indicated in Table 1.

Articles obtained in the search were appraised in terms of relevance, quality and validity in three rounds. In the first round, articles were included or excluded based on their title. In the second round, articles were retained or excluded after reviewing their abstracts. In the third round, the full-text version of each of the remaining articles was obtained³⁷ and reviewed separately by two members of the research team. To determine the quality of the studies reviewed, quality assessment tools were utilised. The conceptual and methodological quality and strength of the quantitative studies was ranked using the *Quality Assessment Tool for Quantitative Studies* developed by the Effective Public Health Practice Project from the Ontario Ministry of Health in Canada.³⁸ This assessment tool has been recommended by other authors.^{39,40} Studies were ranked as strong, moderate or weak in quality.

Due to the small number of studies retained ($n = 11$), a quantitative weighting by study size or quality (meta-analysis) was not conducted. Instead the strengths and weaknesses of each study were taken into account qualitatively in a synthesis of overall findings, and addressed in Section 4.

3. Results

A total of 6890 studies was identified in the database search. Title, abstract and full publication text were examined prior to article inclusion (see Fig. 1). The vast majority of these were rejected as they were deemed ineligible due to one or more of the following factors: the paper focused only on alcohol-related violence, alcohol or sports, or alcohol and sports rather than any connections between these variables; the paper examined the impact of alcohol consumption on sports performance; the paper did not cite empirical research (commentaries, news, etc.); or a combination of the above (see Fig. 1). Overall, 11 studies met the inclusion criteria (see Table 1).

As indicated in Table 1, all of the included studies were published between 1990 and 2012. Nearly all of the research was conducted in the USA, with only two studies including participants of another nationality than American, namely, Australian.^{41,42}

Of the studies reviewed, the mean participant age (SD) was 22.4 (9.5) years, the modal age was 15 years, and participant ages ranged from 15 to 42 years old. Females and males comprised 42.4% and 57.6%, respectively, of the studied populations. The most frequently used sample population was US college/university students ($n = 7$), with the remainder of the studies sampling from middle school or high school student bodies ($n = 2$), current and former professional athlete populations ($n = 1$), and general populations ($n = 1$). The sport context involved in the studies ranged from entire college athletic program ($n = 7$) – and thus comprised many different sport types within each sample – to Australian Football ($n = 1$), American college football ($n = 1$), and unspecified 'sports participation' ($n = 2$).

Of the reviewed studies, the majority identified sports participation and alcohol use as the main predictor variables of aggression and violence in the studied populations.^{41,43–45} In a study comparing sports team participation and non-sports team

Table 1

Past research examining the relationship between sports participation, alcohol consumption and violence.

Author	Year	Country	Research design	N	Sample type	Outcome variable(s)	Study topic	Main findings	Study quality
Dietze ⁴¹	2008	Australia	Cross-sectional	582	Australian Football League athletes	Risky/high-risk drinking and related harms	The relationship between alcohol consumption and alcohol-related harms, including aggression and violence	Off-season high-risk alcohol consumption by AFL athletes was significantly higher than that of the average Australian male. High-risk alcohol consumption correlated positively with instances of verbal and/or physical aggression.	Strong
Frintner ⁴³	1993	USA	Cross-sectional	925	Undergraduate women	Frequency of sexual violence	The relationship between sexual victimisation, alcohol use, fraternity membership, and sports team membership	Sports participation and increased alcohol use significantly predicted the frequency of sexual violence.	Moderate
Garry ⁴⁴	2000	USA	Cross-sectional	3698	Middle school students	17 risk-taking behaviours including alcohol use, violence	Whether sports participation predicted certain risk-taking behaviours	Sports participation significantly predicted increased alcohol use and frequency of verbal and/or physical aggression.	Strong
Gidycz ⁵⁰	2007	USA	Longitudinal	425	College men	Verbal, physical, sexual violence	Whether alcohol use, athletic participation, fraternity affiliation, and early sexual experiences predict violence	Alcohol use or sports participation did not predict violence or aggression. Only past history of violence and aggression predicted such behaviour.	Strong
Koss ⁴⁵	1993	USA	Cross-sectional	530	Undergraduate men	Frequency of sexual violence	Whether alcohol use, athletic participation, and fraternity affiliation predicted sexual violence	Alcohol use and athletic participation significantly predicted sexual assault.	Moderate
Leichtner ⁴	1998	USA	Cross-sectional	51,483	University students	Consequences of alcohol use by university athletes, including violence	The relationship between alcohol use, athletic participation and alcohol-related consequences, including violence	Sports participation significantly predicted increased alcohol use and violent behaviour.	Strong
Martens ⁴⁸	2003	USA	Cross-sectional	260	NCAA Div. 1 athletes	Drinking motives, consequences of drinking, including aggression, violence	The relationship between alcohol consumption in college athletes, drinking motives, and experience of consequences of drinking	Drinking motives – such as coping with stress/pressure – of athletes significantly predicted violent behaviour.	Moderate
Miller ⁴⁹	2006	USA	Longitudinal	680	Adolescents	Adolescent violence	Whether 'jock' identity and binge-drinking predicted violence	'Jock' identity was associated with higher frequency of violence, and more so for males than females. Alcohol predicted violence only in non-jocks.	Moderate

Table 1 (Continued)

Author	Year	Country	Research design	N	Sample type	Outcome variable(s)	Study topic	Main findings	Study quality
Nelson ⁴⁶	2001	USA	Cross-sectional	12,777	Undergraduate students	Frequency of alcohol-related maladaptive behaviour, including aggression	Alcohol consumption and associated harms in US collegiate athletes	Athletic participation was associated with increased binge-drinking, heavier alcohol use, and related harms, including physical and verbal aggression.	Strong
O'Brien ⁴²	2012	Australia	Cross-sectional	1028	Undergraduate students	Athlete aggression, sexual aggression, vandalism	Alcohol consumption and associated harms in Australian university athletes and non-athletes	Athletic participation was associated with more hazardous drinking, and greater rates athlete aggression, sexual aggression, vandalism.	Strong
Swahn ⁴⁷	2005	USA	Longitudinal	6041	High school and middle school students	Alcohol-related fighting/violence	Identifying predictors of alcohol-related fighting and violence among adolescent drinkers	Frequency and volume of drinking, as well as sports participation, predicted violent and aggressive behaviour in adolescents.	Moderate

participation in terms of risk-taking behaviour, Garry⁴⁴ found that sports participation was associated with increased odds for a range of maladaptive behaviours, including alcohol use (OR 1.24, 95%CI 1.05–1.46, $p = .05$), tobacco use (OR 1.26, 95%CI 1.09–1.45, $p = .05$), carrying a weapon (OR 1.25, 95%CI 1.07–1.45, $p = .001$), and being in a physical fight (OR 1.15, 95%CI 1.00–1.32, $p = .001$). Further, in research on alcohol-related violence among adolescent drinkers, high-frequency alcohol consumption (>9 days per

month; $\beta = .80$, OR 2.22, 95%CI 1.20–4.10, $p < .05$), high-volume alcohol consumption ($\beta = .96$, OR 2.61, 95%CI 1.72–3.96, $p < .05$), and weekly sports participation ($\beta = .73$, OR 2.07, 95%CI 1.33–3.22, $p < .01$) all significantly predicted increased odds for alcohol-related fighting and violence. Comparable results were found by Koss,⁴⁵ who demonstrated that sexual aggression was predicted by athletic involvement ($\beta = .11$, $p < .001$) and general alcohol use ($\beta = .23$, $p < .05$). While these studies did not specifically examine interaction effects of alcohol consumption and sports participation on violence or aggression, they nonetheless demonstrated increased odds for alcohol consumption, aggression and violence in sports populations,⁴⁴ and positive correlations between violence and both alcohol consumption and sports participation.⁴⁵

Examining the nature of the relationships between alcohol consumption, sports participation and violence more closely, Leichter et al.,⁴ Nelson and Wechsler,⁴⁶ and Swahn and Donovan⁴⁷ all found evidence indicating higher alcohol consumption for sports participants when compared against non-sports participants, and in turn, a higher likelihood of violence and other negative consequences for sports participants. Thus, the relationship between alcohol, sports participation, and aggression and violence appears to be relatively robust across studies, with significant effects ranging from adolescent to adult populations. Further, the studies comparing athletes and non-athletes indicate a stronger relationship between alcohol and violence in the former population, suggesting sports participation as a moderator of the observed relationships between alcohol consumption and violence.^{4,46,47}

Acknowledging the relatively high rate of alcohol consumption among sports populations, Martens⁴⁸ examined the relationship between college athletes' drinking motives and related maladaptive behaviours. Drinking alcohol to cope with stress (e.g. stress reduction) significantly predicted negative involvement with police ($\beta = .18$, $p < .05$), damaging of property ($\beta = .19$, $p < .01$), arguing or fighting ($\beta = .22$, $p < .05$), and personal injury ($\beta = .34$, $p < .01$). Consuming alcohol for social and self-enhancement reasons, however, did not predict violent behaviour. Thus, it would appear that athlete aggression and violence may be connected by way of drinking motive rather than by drinking per se.

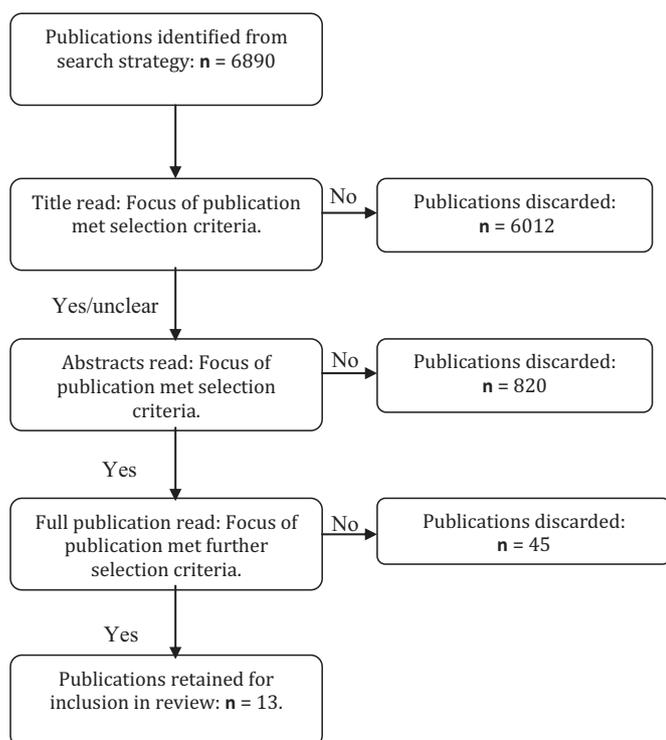


Fig. 1. Publication screening and inclusion flowchart.

The relationships between alcohol, violence and sports have also been examined in terms of identity. Miller et al.⁴⁹ investigated the extent to which the perception of the self as a 'jock' predicted non-family violence and family violence, and how this perception was linked to binge drinking. Results indicated significant associations between jock-identity and violence ($\beta = .37, p < .001$). While binge drinking only predicted family violence among non-jocks at a statistically significant level ($\beta = .01, p < .001$), jocks still reported considerably higher frequencies of non-family violence than non-jocks.⁴⁹ In light of this, it again would appear that sports participation – or the endorsement of the sports identity – is somehow related to higher rates of aggression and violence.

A single study focusing on the impact of alcohol use, athletic participation, fraternity affiliation, and early sexual experiences on frequency of violence found no significant relationships among these variables.⁵⁰ The only factors identified as predicting violence in athletes was a past history of violent behaviour and aggression.

4. Discussion

Of the 11 studies reviewed, all^{4,41–47} but one⁵⁰ demonstrated significant relationships between alcohol use, sports participation and aggression and/or violence. Indeed, based on the evidence, it would appear that alcohol consumption and the occurrence of a host of negative consequences, including violence and aggression, are higher in sports populations than in non-sports populations. The specific nature and dynamics underlying the observed increased alcohol consumption and likelihood of violence in sports participants, however, is less clear and of prime interest.

Of the reviewed studies, only two directly examine the genesis of the observed relationship between sports participation, alcohol consumption and violence.^{48,49} The cognitive/emotional approach of Martens et al.⁴⁸ suggests a causal relationship between sports participation and alcohol consumption (and subsequent violence) by way of drinking motive. Specifically, drinking to alleviate the pressure and stress resulting from participation in competitive sports translates to a higher likelihood of negative consequences, including violence and aggression.⁴⁸ Thus, it may not be sports participation per se which leads to higher alcohol consumption and subsequent consequences, but rather the cognitive and emotional costs resulting from being part of a collegiate level athletic program. This conclusion complements past research showing that pressure and stress in general as well as that related to sports often leads to increased alcohol consumption as a method of self-medication.^{51,52}

Further insight into the nuances of the relationship between sports, alcohol and violence is gained from the work of Miller et al.⁴⁹ Factors related to social identity and norms were in focus as central factors that were conducive to certain behaviours. In particular, subscribing to the 'jock identity' was found to be associated with increased likelihood of violence and binge-drinking (though the latter finding failed to reach statistical significance). On the strength of this evidence, the individual endorsement of a certain social group ('jocks') as well as the perceived norms inherent to that group, were emphasised as a principal dynamic underlying aggression and violence in the sample. While the role of alcohol was of a somewhat secondary nature, consumption still appeared to contribute to violence in at least part of the population under study, and certainly featured as an important factor in the overall relationship. This draws attention to the consequences of a particular culture or set of norms (e.g. alcohol consumption and violence) which may define the 'jock'- or sports-identity and in effect dictate the appropriate and expected behaviour of 'jocks'. Again, in this context, sports participation alone is unlikely

to precipitate alcohol use and/or violence. Instead specific social norms and identities attached to sport types and teams give rise to particular values and behaviours in the individual team-member.

The importance of social norms and group culture in violence and alcohol consumption in sports participants has also been heavily emphasised in the realm of qualitative inquiry.^{53,54} For example, the hyper-masculine environment present in many male team sports such as professional ice-hockey and various college sports (e.g. American football, baseball, etc.) are maintained as a form of team cohesiveness and bonding, and often lead to demonstrations of masculinity through displays of sexist behaviour, excess alcohol consumption and verbal and physical fighting.^{53,54} There is an extensive body of research supporting such cultural and socio-cognitive explanations of behaviour.^{55,56}

A major limitation of the reviewed studies is the lack of representative power resulting from the overrepresentation of North American collegiate populations. Of the reviewed studies, 10 were conducted in the US. Thus, the team cultures and social norms identified in this review as intrinsic to violence and alcohol consumption among athletes may be different in other countries. Specifically, in societies where sports participation is not as valued and prestigious as in the US, the norms and cultures attached to these sports may be less likely to guide participants' behaviour. More research examining other populations is therefore needed.

Another limitation relates to the lack of multiple factor models in the reviewed literature. For example, the questions of whether *type* and *level* (professional, amateur) of sport changes the relationship between alcohol consumption and/or violence have not been directly addressed.

5. Conclusion

The review identified 11 studies which met the inclusion criteria, most of which reported significant relationships between alcohol consumption, violence and sports participation, with only a single study finding no significant effect. Factors possibly underlying this relationship centred on coping mechanisms for athletes under pressure, as well as the potentially negative athlete social identity as derived from sports team membership. This complements previous research emphasising sports culture and social norms as endorsing hegemonic masculinity, objectification of women, excessive alcohol use, and on-field and off-field violence. Based on the studies reviewed, alcohol consumption, violence and sports participation appear to be linked. Further, the available evidence indicates a higher rate of alcohol consumption and violence in athlete populations than non-athlete populations, suggesting a moderating effect of sports participation in the positive relationship observed between alcohol use and violence. Further, underlying factors conducive to violence and alcohol consumption, including the masculine cultures and related social norms attached to certain sports, also feature in this relationship, potentially specifying type of sport, rather than sport per se, as an important factor. Given the small number of studies conducted in this area and the limitations identified, considerably more research is needed to clarify the relationship between the main variables identified in this review. In particular, research addressing the effects of sports-based social identity on alcohol consumption and violent behaviour would represent a valuable addition to the literature.

Conflict of interest

None.

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