Interventions in sports settings to reduce alcohol consumption and alcohol-related harm: a systematic review protocol

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ABSTRACT

Introduction: Alcohol consumption is a primary cause of physical, psychological and social harm to both the user and others. At both the professional and non-professional level, sports players and fans report consuming alcohol at greater levels than people not involved in sports. Limited systematic reviews have been conducted assessing interventions targeting alcohol consumption behaviour and related harms in the sporting context.

Methods and analysis: The review aims to determine if interventions implemented in the sport setting decrease alcohol consumption and related harms. Participants may include all persons regardless of age or other characteristics. Studies will be included which have implemented interventions within the sport setting and have either measured: alcohol consumption, excessive alcohol consumption or intoxication or alcohol-related injury or violence. Randomised controlled trials, staggered enrolment trials, stepped-wedged trials, quasi-randomised trials, quasi-experimental trials and natural experiments will be included. Studies without a parallel comparison group will be excluded. Data will be sourced from a range of electronic databases and sources of grey literature. Two authors will independently screen all titles and abstracts of papers identified through the search strategy. Two authors will independently examine the full text of all remaining papers to determine eligibility. Two authors will independently extract data from eligible studies and independently assess risk of bias by assessing the adequacy of study characteristics. Where studies are sufficiently homogeneous, trial results will be synthesised using a fixed-effects meta-analysis. Standardised mean differences will be used for continuous outcomes and RRs will be used for binary outcomes.

Dissemination: The findings of this study will be disseminated widely through mechanisms including peer-reviewed publications and conference presentations.

INTRODUCTION
Rationale

Alcohol consumption is a primary cause of physical, psychological and social harm to both the user and to others.[1] [2] Alcohol consumption that is linked to short-term

ARTICLE SUMMARY

Article focus
- The aim of the review is to determine if interventions implemented in the sport setting are effective relative to a comparison group in:
  – reducing alcohol consumption at the sporting venue and/or overall alcohol consumption or
  – reducing excessive alcohol consumption or intoxication at the sporting venue and/or overall excessive alcohol consumption or intoxication or
  – reducing alcohol-related violence or injury at the sporting venue and/or overall alcohol-related violence or injury.

Key messages
- At both the professional and non-professional level, sports players and fans report consuming alcohol at greater levels than people not involved in sports.
- Few systematic reviews have been published describing the impact of interventions targeting excessive alcohol use and injury in the sporting club setting.

Strengths and limitations of this study
- The review will employ a comprehensive search strategy to identify relevant English and non-English language peer-reviewed and grey literature publications.
- Trial screening and data extraction will be conducted independently by two review authors.

harm most frequently occurs in licensed venues (such as clubs and bars),[3−6] in workplaces[7] and in private homes[3−5] and occurs with greater prevalence among particular population groups, including people involved in sports. At both the professional (or elite) level and non-professional level, both sports players and fans have reported consuming alcohol at greater levels than people not involved in sports.[8−14] For instance, studies of college athletes in the USA have found significantly higher levels of binge drinking among male (61%) and female (50%) college athletes compared with males (43%) and females (36%) not involved

in college athletics.[14] Similarly, research in New Zealand has documented rates of binge drinking among elite (56%−59%) and non-elite sportspeople (51%) that are considerably higher than non-sportspeople (31%)[13] and non-elite sportspeople in Australia have reported higher rates of risky drinking (35%) compared with the general population (26%).[8] Rates of binge drinking among sports fans (males: 53%; females: 53%) have also been reported to be significantly higher than among non-fans (males: 41%; females: 37%).[12]

A settings-based approach to health promotion[15] has been widely used to target alcohol consumption behaviour in licensed premises.[16−18] Such approaches have a basis in ecological and social ecological theories of health promotion,[19−21] which recognise the importance of the physical, social and cultural environment in health risk behaviours such as alcohol consumption. Given the prevalence of at-risk consumption among sports players and fans, interventions targeting alcohol consumption at sporting settings may represent an effective strategy in mitigating the adverse effects of excessive alcohol consumption. Such interventions may include the sale of low-alcohol and non-alcohol beverages[22] and the prohibition of drinking games and promotions including cheap or discounted drinks[23] and alcohol-only awards or prizes.[24]

To our knowledge, to date, only one systematic review has been conducted assessing interventions targeting health behaviour change in the sporting context.[25] However, this review only examined policy interventions and focused on alcohol consumption behaviour, rather than including broader alcohol-related harms such as violence.

Objectives
To determine if interventions implemented in the sport setting are effective relative to a comparison group in:
1. reducing alcohol consumption at the sporting venue and/or overall alcohol consumption or
2. reducing excessive alcohol consumption or intoxication at the sporting venue and/or overall excessive alcohol consumption or intoxication or
3. reducing alcohol-related violence or injury at the sporting venue and/or overall alcohol-related violence or injury.

METHODS AND ANALYSIS
Eligibility criteria
Study characteristics
Participants
Participants may include people of all ages and may include, but are not limited to: players; fans/spectators; coaches/trainers; sporting club, venue or team management; and, sporting club or venue staff or volunteers. There will be no exclusion criteria for participants.

Interventions
Interventions will be included that are implemented in a sporting setting and that aim to modify at least one of the following: alcohol consumption behaviour, alcohol-related intoxication or alcohol-related violence or injury. These could include health promotion, health education (eg, targeting the skills, knowledge, attitudes or belief or sports players, club members or spectators), regulatory (eg, enforcement of legislation regarding the sale or supply or alcohol) and environmental (eg, serving alcohol in plastic containers or the provision of safe transport options to club patrons) initiatives. Interventions that aim to address such outcomes and aim to modify other health risk behaviours will also be included. Interventions with a treatment focus, such as those aiming to treat alcohol addiction, will be excluded. For the purposes of the review, sport settings will be defined as settings where an organised sporting event or activity occurs, whether it is a competition game or event, a training session or another type of club or team event at a professional (elite) or non-professional (amateur/community) level. Terms used to refer to such settings may include arenas, stadiums, grounds, complexes or ovals, as used by a particular sport or for general sports use.

Comparisons
Comparisons could include no intervention, attention controls, waitlist controls or an alternative intervention.

Primary outcomes
Studies with the following primary outcome measures will be included:
- alcohol consumption, such as number of drinks consumed or alcohol consumed at excessive/risky levels, as assessed via survey or direct observation.
- alcohol-related intoxication, such as proportion of people intoxicated or average level of intoxication, measured by surveys, observations or biochemical measures and
- alcohol-related violence or injury, such as number of incidents of alcohol-related assault or number of alcohol-related injuries, measured by surveys, observations or records kept by police, medical facilities or sporting facilities, which may include incidents that are either self-reported or witnessed.

Study design
Studies with the following study designs will be included:
- randomised controlled trials, including cluster randomised controlled trials,
- staggered enrolment trials[26] or stepped-wedged trials,[27]
- quasi-randomised trials, where group allocation is not purely random but may be determined by a factor such as birth date,[28 29]
- quasi-experimental trials with comparison/control groups, including non-randomised pre- and post-trials (before−after) with one or more intervention and control groups,[30] time-series/interrupted time-series trials (including multiple baseline trials) with

independent control groups,[26] [30] preference trials[27] and regression discontinuity trials and[26]

► natural experiment studies that have a comparison group.[31]

Any trials without parallel comparison or control groups will be excluded.

Length of follow-up
There will be no eligibility criteria based on length of follow-up.

Publication characteristics
There will be no eligibility criteria based on year of study publication or language.

Information sources
Electronic databases
The following electronic databases will be searched: the Cochrane Central Registry of Controlled Trials (CENTRAL, The Cochrane Library), MEDLINE, EMBASE, PsycINFO, SPORTDiscus, Dissertations and Theses, ERIC and PsycEXTRA.

Other sources
Studies will also be obtained from the following sources:
► Reference lists of included studies.
► Hand searching of three relevant journals in the field (volumes from the past 5 years).
► Freely available internet databases including: Alcohol and Alcohol Problems Science Database (available at: http://etoh.niaaa.nih.gov/); BiblioMap (available at: http://eppi.ioe.ac.uk/webdatabases/Intro.aspx?ID=7); Lifestyle Information Network (available at: http://lin.ca/recreation-database); SportScan Article Database (available at: http://www.ausport.gov.au/information/nsic/catalogue/sportscan_article_database).
► Internet searches engines, such as Google Scholar.
► Corresponding authors of all included trials.

Search strategy
The search strategy for MEDLINE is in online Appendix I. This strategy will be applied to the other electronic databases where relevant, with any modifications reported in the review manuscript. Authors will be contacted via email to obtain any studies that are identified through searching other sources.

Study selection
Two review authors will independently screen all titles and abstracts of papers identified as a result of the search documented above. Endnote (version X4.02) will be used for the screening process, with review authors employing a standardised pre-piloted screening tool to assess study eligibility. The abstracts of papers that are in a language other than English will be translated using Google Translate and, if considered eligible or eligibility is unclear, professional translation of the full paper will

be undertaken. Based on an assessment of paper title and abstract, papers will be excluded which do not meet the eligibility criteria of the review. Two review authors will independently examine the full text of all remaining papers to determine study eligibility. Reasons for study ineligibility will be recorded for all full-text articles, and this information will be documented in a table accompanying the published review. For papers where there is insufficient information to determine eligibility, the study authors will be contacted for clarification. Where sufficient information to determine the eligibility of a trial is not available, the trial will be excluded from the review. Disagreement regarding study eligibility will be attempted to be resolved through discussion between the two reviewers responsible for trial screening. The decision of a third reviewer will determine study eligibility in instances where consensus cannot be reached. Review authors will not be blind to the name or institution of study authors or to journal titles.

Data extraction
Two review authors will independently extract data from eligible studies. A pre-piloted form designed specifically for this review will be used to extract data from eligible studies for assessment of study quality and evidence synthesis. Disagreement regarding data extraction will be attempted to be resolved through discussion between the two reviewers. A third review author will review any papers on which consensus cannot be reached. One review author will transcribe data from data extraction forms into the systematic review software Review Manager (RevMan) and the second review author will check this process. In instances where data are unclear or is not available from the published manuscript, attempt will be made to contact study authors. Review authors will not be blind to the name or institution of study authors or to journal titles.

Data items
Extracted information will include authors, study funding and/or other sources of conflicts of interest, study setting (including country, type of sport and level of professionalism), study population and participants demographics (including age, gender and role, such as player or spectator/fan), study design, intervention and control conditions (including number of conditions, content, duration and intensity), trial outcomes and results (including study consent rates and attrition, sample size, number of participants per experimental condition and per cluster if relevant, inter-class coefficients if relevant and results of the primary outcomes described above) and information for assessment of study bias (see below).

Attempts will be made to contact the corresponding authors of included trials in instances where data are unavailable in the published manuscript. Any assumptions or simplifications made in the data extraction or

management process due to unavailable information will be documented in the final manuscript.

Assessment of risk of bias

Two review authors will independently assess risk of bias in eligible studies by assessing the adequacy of the following study characteristics, as outlined in the Cochrane Handbook for Systematic Reviews of Interventions: sequence generation, concealment of treatment allocation from participants and research personnel at time of study enrolment, blinding of research personnel (including data collection and analysis personnel) throughout the trial, completeness of outcome data (including treatment of exclusions, attrition and incomplete data), selective outcome reporting and any other potential sources of bias.[32]

For any non-randomised trials included in the review, the authors will assess any selection bias that may have lead to confounding of the outcome of interest and the appropriateness of any statistical methods used to adjust for such confounding. Additional biases specific to individual study designs will be assessed on a case-by-case basis and in consultation with relevant methodological experts and noted in a supplementary risk of bias table.[32]

Disagreement regarding assessment of risk of bias will be attempted to be resolved through discussion between the two reviewers. A third review author will be consulted in cases in which consensus cannot be reached. The level of risk of bias for each of the above-mentioned study characteristics will be presented separately for each study in a table accompanying the published review.

Data analysis
Summary measures

Internationally, there is considerable inter-country variability in the amount of alcohol that defines a standard drink,[33] in guidelines regarding safe levels of alcohol consumption and in the definition of 'at-risk' drinking.[33 34] There is also no standard, recognised definition of intoxication[16] and jurisdictional variability in the classification, measurement and recording of incidents of alcohol-related violence and injury.[35] Furthermore, there are a variety of commonly used survey tools[36 37] and observational and biological approaches to the assessment of alcohol consumption and intoxication.[38] As such, it is anticipated that there will be a range of different outcome measures reported across included studies, which may preclude meta-analytical synthesis of the data from these trials.

Nonetheless, outcome data will be included in meta-analyses if appropriate. For assessment of alcohol consumption, attempts will first be made to standardise outcomes reported in included trials to a continuous measure of grams of alcohol consumed and intervention effect reported in meta-analyses as a mean difference with 95% CIs. Alternatively, if continuous measures are not able to be standardised to the common metric of grams of alcohol consumed, attempts will be made to pool trials and report intervention effect as a standardised mean difference with 95% CIs. Where possible, RRs will be used to measure intervention effect for binary outcomes.

Given the limitations outlined above, it is likely that some outcome measures will not be able to combine in meta-analysis given a lack of standard definitions. Intervention effect for studies reporting such data will be described narratively.

Data synthesis and analysis

Where studies are sufficiently homogeneous and report the same outcome measure, RevMan will be used to synthesise trial results using a fixed-effects model. Meta-analyses will be performed in strata based on study design. If there is unexplained statistical heterogeneity, a random effects model will be utilised. For trials with multiple postintervention follow-up points, data from the most recent follow-up data collection (furthest follow-up point from recruitment) will be utilised. Similarly, intention-to-treat trial outcome data will be used in preference to data included in less conservative analyses. Attempts will be made to contact authors of trials with any missing data.

Where appropriate, sensitivity analysis will be performed with trials that are judged to represent an overall high risk of bias based on the risk of bias assessment tool. Where trial outcome data cannot be combined, or significant heterogeneity exists, findings of included trials will be described narratively according to the review objectives.

Issues of clustering

In cluster randomised controlled trials where the effects of clustering have not been adjusted for, adjustments will be made to the SDs for the design effect, using either intra-class coefficients provided in study reports (or by contacting authors) or estimates from similar studies.

Assessment of study heterogeneity

Heterogeneity between studies will be assessed using both visual inspection of forest plots and the I^2 statistic. An I^2 value >50% will be considered indicative of substantial heterogeneity, and careful consideration will be given to the appropriateness of meta-analysis. In order to identify possible sources of heterogeneity, subgroup analyses will be conducted based on participants, design, interventions, outcomes and study quality (including risk of bias and level of participant drop-out).

Assessment of reporting bias

Funnel plots of eligible studies will be examined to assess any bias that may arise through selective reporting within studies.

Additional analyses

If appropriate, the following exploratory subgroup analyses will be conducted:
1. Interventions targeting different sports.
2. Interventions targeting the different groups of people attending sporting settings (such as players and fans/spectators).

Categorical comparisons for subgroup analyses will be developed following inspection of the study characteristics and outcomes reported in the included trials.

ETHICS AND DISSEMINATION

Ethics is not required given this protocol is for a systematic review. The findings of this study will be disseminated widely through mechanisms including peer-reviewed publications and conference presentations.

DISCUSSION

This systematic review will provide a detailed summary of the current state of evidence for the effectiveness of interventions in sports settings that are aimed at reducing alcohol consumption and related harms. Such a review will be of benefit to researchers and policy makers with an interest in reducing alcohol-related problems associated with the sports setting.

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