The hazards of watching football — are Australians at risk?

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ABSTRACT

Objective: To review whether watching football increases the population cardiac event risk in New South Wales.

Design: Analysis of hospital admissions for acute myocardial infarction, other cardiovascular disease, and other acute injuries at the time of two stressful sporting events in NSW in 2005: the Sydney Swans playing in the Australian Football League (AFL) Grand Final, and the Socceroos' penalty shoot-out in their World Cup qualifying match against Uruguay.

Results: There were no increases in any of the studied admission events at the time of, or in the days immediately following, these football matches.

Conclusions: Australians appear to be resistant to acute stressors associated with watching sporting events, possibly due to higher rates of motivational deficiency disorder (MoDeD) than in European populations.

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Sudden stress or anger may trigger cardiac events or sudden death. Increased rates of these events have been noted during war or after earthquakes[1,2] and also immediately following stressful national and international sporting events.[3] Football, particularly soccer, is the most noteworthy and oft-reported cause of such acute population stress, indignation and anger. These responses may be induced by close matches, by national pride, or by referee errors regarding the "offside rule"; one study showed the rate of referee errors to be as high as 26%.[4] In a Swiss study, sudden cardiac deaths increased around the time of the 1998 and 2002 World Cup matches.[5,6] In England, a 25% increase in hospital admissions from cardiovascular causes was noted in the 2 days following the 1998 World Cup penalty shoot-out between England and Argentina,[3] when the match was decided in Argentina's favour (4–3). Another study has shown similar soccer-related cardiac risks in the Netherlands during the 1996 European championship.[7]

We assessed these risks in Australian populations, specifically New South Wales residents, during two stressful sporting events in 2005: the Sydney Swans' appearance in the 2005 Australian Football League (AFL) Grand Final, and Australia's World Cup soccer qualifying match against Uruguay. Our central hypothesis was that Australian Sports Spectator Behaviour (ASSB) would protect spectators from risks induced by sport-related stress.

METHODS

The stressful sporting events

The AFL Grand Final between the Sydney Swans and the West Coast Eagles, held on Saturday, 24 September 2005, was one of the closest in AFL history. The match was in the balance until the last seconds, when the Swans' defender, Leo Barry, executed the biggest (and goal-saving) mark of his career, giving the Swans their first premiership since 1933.

The regional World Cup soccer qualifying match between Australia and Uruguay on Wednesday, 16 November 2005 was similarly tense. After a 0–1 loss in Montevideo, the Socceroos led 1–0 at full-time in Sydney, necessitating a penalty shoot-out. The successful penalty goal scored by John Aloisi sent Australia to its first World Cup appearance since 1974.

Both events had large television audiences; in Sydney, the AFL Grand Final was watched by 991 000 people, and the World Cup qualifier by 924 000 (television ratings from <http://www.oztam.com.au>). These figures suggest high enough spectator exposures to assess the health risks of these events.

Data extraction

Data were extracted from the NSW Inpatient Statistics Collection through the HOIST (Health Outcomes Information Statistical Toolkit) system for hospital admissions surrounding both events. Hospital admissions for adults aged 15–74 years were identified over a 28-day period covering 2 weeks before and after the day of each match. Using International classification of diseases, 10th revision (ICD-10) coding, admissions were sought for a principal diagnosis of acute myocardial infarction (ICD-10 codes: I21, I22), stroke (I61–I64), deliberate self-harm (X60–X84) and road traffic injuries (V09.3, V48.9, V49.9, V79.9, V82.9, V83.0, V84.0, V85.0, V86.3).

Statistical analysis

The number of events in each admission category was tabulated for the index match day. The match day and the 2 days following it were classified as "exposed", and the other 25 days as "non-exposed" days. To compare the number of admission events between exposed and non-exposed days, negative binomial regression models were used to model the numbers of events, adjusted for sex, age groups and day of the week.

RESULTS

The results are presented as relative risk ratios of the number of admissions between exposed and non-exposed days (Box). There were 28 admissions with a diagnosis of myocardial infarction on the day of the soccer penalty shoot-out, which was higher than on the following 2 days ($n = 21$/day), but since the match started at 8 pm, most myocardial infarctions occurring on match day were likely to precede kick-off. After adjusting for sex, age and day of the week, there was no increased risk on

Risk of hospital admission for cardiac and other acute health outcomes in New South Wales following acute sporting stress

Australia–Uruguay World Cup soccer qualifier, 16/11/2005; ISC admissions data from 03/11/2005 to 30/11/2005

	Exposure (number of admissions per day)			Relative risk ratio (95% CI) compared with non-exposed days		
Admission diagnosis	Day of match (Wed)	2 days following match	Non-exposed days* ($n = 25$)	Non-exposed days	Day of match†	2 days following match‡
Acute myocardial infarction	28.0	21.5	26.4	1.00	0.96 (0.63–1.45)	0.73 (0.53–1.02)
Stroke	18.0	15.5	11.3	1.00	1.46 (0.83–2.56)	1.31 (0.86–2.00)
Cardiovascular disease	46.0	37.0	37.8	1.00	1.10 (0.78–1.55)	0.90 (0.69–1.17)
Road traffic injury	0.0	0.5	0.9	1.00	1.65 (0.48–5.70)	1.51 (0.62–3.66)
Deliberate self-harm	24.0	24.5	26.6	1.00	1.03 (0.64–1.64)	0.82 (0.59–1.13)

Sydney Swans–West Coast Eagles AFL Grand Final, 24/09/2005; ISC admissions data from 11/09/2005 to 08/10/2005

	Exposure (number of admissions per day)			Relative risk ratio (95% CI) compared with non-exposed days		
Admission diagnosis	Day of match (Sat)	2 days following match	Non-exposed days* ($n = 25$)	Non-exposed days	Day of match†	2 days following match‡
Acute myocardial infarction	23.0	28.0	28.0	1.00	1.06 (0.61–1.84)	1.28 (0.90–1.83)
Stroke	7.0	15.5	10.5	1.00	0.69 (0.32–1.49)	1.25 (0.87–1.80)
Cardiovascular disease	30.0	43.5	38.5	1.00	0.94 (0.59–1.50)	1.23 (0.93–1.62)
Road traffic injury	0.0	0.5	1.4	1.00	0.98 (0.35–2.77)	0.85 (0.41–1.76)
Deliberate self-harm	23.0	26.5	27.8	1.00	0.97 (0.59–1.60)	0.84 (0.60–1.16)

ISC = Inpatient Statistics Collection data for NSW hospital admissions.
* Non-exposed days cover 2 weeks before the match and 2 weeks after it, excluding the match day and the 2 days immediately after the match day.
† Comparing "Day of match" with "Non-exposed days" ("2 days following match" excluded from model).
‡ Comparing "2 days following match" with "Non-exposed days" ("Day of match" excluded from model). ◆

the day of the match or the 2 subsequent days, compared with non-exposed days. This was noted for all admission diagnostic categories studied. Similar results were noted for the Sydney Swans' Grand Final day, with no increase in admissions from cardiac or other events.

DISCUSSION

The stress-induced risks of watching football, noted in Europe and elsewhere, were not seen among NSW residents in our study. There are several possible explanations for this, broadly divisible into biological or psychological aetiologies.

Biologically, it does not appear likely that Australian populations are less prone to vascular hypercoagulability and haemodynamic changes (thought to be the mechanism linking major emotional turmoil and thrombogenesis[3]) than European spectators. Identifying *spectator-protective* genetic markers may be a useful research endeavour, to ascertain why Australian lounge chair-adherent enthusiasts have a selective advantage, compared with their European counterparts.

A recent report in the *BMJ*[8] described a newly Australian-discovered condition, motivational deficiency disorder (MoDeD), that is characterised by pervasive psychosocial and physical inertia. This condition has only been described by Australian scientists.[8] Our data provide some indirect validity of MoDeD's existence. However, instead of costing millions of dollars in associated health care costs, the prevalent syndrome in the sport-spectator population may actually protect against acute sport-watching-related cardiovascular events. Further, this syndrome, that has been dismissed by many,[9] may be part of a cluster of diseases previously described as "hypokinetic disorders",[10] which includes other conditions such as the "couch potato syndrome", also known as SeDS (sedentary death syndrome).[10] Treatment with Indolebant is recommended for MoDeD,[8] and Brazilian physicians have prescribed Agitol or Exercil for treatment* of SeDS.[11] However, during times of acute sporting stress, we suggest that these medications be discontinued as the cardioprotective benefits may be lost.

An alternative explanation may lie in cultural practices that ameliorate adverse emotional responses, especially seen as part of ASSB. Incomplete concentration or lack of full engagement with the sporting event may be produced by extremely frequent exposure to sports telecasts; by aggravation caused by rapid channel changing; and by transitional blurring induced by alcohol consumption and large comfortable chairs. Other potential confounders that might mask any apparent relationship include temperature and weather differentials (it doesn't get cold enough in Australia to induce myocardial stress), and language and cultural differences (it's more stressful to barrack in a Yorkshire accent, or in Dutch); these factors should be considered in future research.

A final possible explanation might be characterised as "Winners are Grinners", where the adverse health effects in stressful sporting events seem to be confined to supporters of the losing teams. If this hypothesis is proven, it could result in increased financial investment in teams that do well and in sports where Australia is likely to win, as this may confer public

* Note that Agitol and Exercil are recommended anti-sedentary medications to reduce risk of cardiovascular disease; they are pharmacologically placebos, but have major preventive benefits if taken once daily (Agitol) with a half-hour walk to "metabolise the medication", and one three times a day for Exercil, each time followed by a 10-minute walk.

health advantages as well as stimulating sporting nationalism. Following the French victory in the 1998 soccer World Cup, heart attack rates were, if anything, lower than usual in France.[12] As both of the matches we studied ended in victory for the local supporters, this could be the protective factor in our study. This theory can now be empirically tested, when data from the period following the 2006 AFL Grand Final are available: identical teams but a reversed result. Another Antipodean factor is that the national sporting interest is spread across four football codes, which could dilute the acute code-specific population risk. Eurosoccer fanaticism, directed at a single dominant code, may induce the increased risk demonstrated in European studies.

Overall, it is probably safe for the Australian population to watch telly over the Christmas break — even to watch the Ashes Test series — with minimal increased cardiac risk. We are likely to win, anyway. No worries, mate.

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COMPETING INTERESTS

No authors have competing interests, or membership or affiliation with any of the football clubs discussed here. However, Adrian Bauman was the Deputy Assistant (Relieving) Coach for the MLC School under-15 A soccer team in 2006 that won the interschool grand final. No cardiac events were recorded among spectators.

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