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THE INFLUENCE OF WATCHING FOOTBALL MATCHES ON ACUTE CARDIOVASCULAR EVENTS

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ABSTRACT

Introduction and Objective: Acute emotional stress with big football matches is recognized to precipitate cardiovascular events in some individuals. The purpose of this narrative review is to address the existing scientific evidence regarding the association of viewing football matches with the risk of cardiovascular events like myocardial infarction, arrhythmias, and sudden cardiac death.
Methods: The review was based on an extensive PubMed database search conducted in April 2025. Articles were graded on methodology, sample description, scope of study, and results reported. There were no restrictions on publication dates. English-language studies and applicable book chapters only were considered.
Conclusions: The studies indicate that emotionally charged matches - especially if spectators are strongly bonded or identify intensely with their team - can raise the risk of cardiovascular incidents, especially in men who have a background of cardiovascular illness. Population data are contentious, nevertheless, and additional confounding variables like alcohol consumption, smoking, and unhealthy diet might be involved. Healthy emotional reactions (e.g., victories) can be protective. The public health interventions should aim at reducing behaviour and offer emergency readiness in risk high-risk environments like stadiums or fan zones. The measures of public health should emphasize reducing risk behaviour and offer emergency preparedness in high-risk environments like stadiums.

KEYWORDS

Football Viewership, Cardiovascular Events, Emotional Stress, Myocardial Infarction, Stroke, Sports and Health

CITATION

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Introduction.

Sport is a vital part of life, and the feelings evoked by sports on television significantly contribute to the health of viewers. Particularly intense experiences related to watching important football matches are capable of eliciting sudden physiological reactions, e.g., acute cardiovascular events [1]. Medical literature increasingly describes the link between spectators' intense emotional tension and susceptibility to having a heart attack, stroke or other cardiovascular diseases [1,2].

Psychological processes as well as physiological have been demonstrated through studies to be involved in the increase during major sporting events, such as the FIFA World Cup, for hospitalization of acute coronary syndromes [3,4]. High blood pressure, tachycardia, endothelial dysfunction, platelet activation, a tendency to arrhythmias, and microvascular dysfunction are only a few of the processes capable of bringing about cardiovascular events [5,6]. In addition, smoking, unhealthy high-fat diets, excessive salt intake, and alcohol consumption - typically while watching sporting events - can potentially elevate the risk [1].

The aim of the paper is to review existing literature on the impact of fan emotional responses on the cardiovascular system. The review will include epidemiological evidence of cardiac event rises during periods of heightened sporting emotion and potential physiological mechanisms for this effect. Preventive interventions that have the capacity to reduce the risk among athletes particularly vulnerable to the negative impact of emotional investment in sport competition will also be discussed [1].

This paper attempts to find out whether excessive fan involvement is a significant risk factor for cardiovascular health and how the risk can be decreased. Understanding this phenomenon is particularly important, especially for patients who already have cardiac diseases, as well as for physicians, psychologists, and organizers of sports events, since they can inform more people about dangers to their health.

Objective

The aim of this narrative review is to report and discuss the current scientific literature on the impact of watching football matches on the risk of acute cardiovascular events such as heart attack, stroke, arrythmia or other cardiovascular diseases. The review aims to determine whether there is a link between watching football matches and the risk of sudden cardiovascular events. In addition, the combination of the available research allows for the ascertainment of whether certain individual characteristics, comorbidities or the significance of specific sporting events have the ability to alter the magnitude of this potential relationship. The review also includes some preventive mechanisms that have the potential to reduce the risk of cardiovascular disease during periods of severe emotional stress related to sports watching.

Methodology

The review was conducted through comparison of scientific articles in the PubMed database through April 2025. The articles were compared in methodology utilized, population characteristics, study size, as well as outcome and conclusions. There were no date restrictions on publication dates of research articles. Book chapters were utilized as well. Only studies written in English were sought. The reference lists of identified studies were searched for additional articles. The studies were screened based on the title and abstract and then selected for full-text review by the first author (JS). Relevant data from included articles were collected by two researchers (JS, ŁB). One meeting of the whole team was organized to review included studies and establish the subsections for this article.

Results

In the "Central hemodynamics and arterial stiffness during the finals of the World Cup soccer championship" paper in the International Journal of Cardiology by Reppel et al., authors compared the impact of emotional stress caused by watching soccer matches (finals of the 2010 FIFA World Cup) on central hemodynamics and arterial stiffness - variables recognized as strong, independent predictors of cardiovascular risk [7]. The investigation compared the physiological reaction of 13 healthy supporters viewing matches of the German national team (GP) and non-German involvement matches (noGP). During match viewing of the German national team, the supporters showed a remarkable increase in systolic blood pressure by approximately 7% (1st half: 118±1 mmHg vs. 126±2 mmHg, $p<0.001$; 2nd half: 117±1 mmHg vs. 125±2 mmHg, $p=0.007$). The GP group presented a significantly higher mean heart rate, both during the game (1st half: 85.8±2.6 vs. 72.6±1.9; 2nd half: 86.7±2.3 vs. 74.5±1.7), as well as two hours prior to kick-off (81.2±2.0 vs. 68.2±2.0) and one hour after the game (80.6±1.9 vs. 76.1±1.8). The research found that emotional involvement while viewing national team games causes physiologically measurable stress in the form of elevated blood pressure, heart rate, cardiac output, and peripheral resistance - all of which can increase cardiovascular event risk. Among the limitations of the study was the small sample size (n=13) of young (mean age 37.6), healthy individuals with no chronic illness, on no medication, with normal ECGs and mean BMI of 23 [7].

The paper "Football spectatorship and selected acute cardiovascular events: lack of a population scale association in Poland", published in 2020 in Kardiologia Polska by Jenny E. Simon, Łukasz A. Małek et al., aimed to establish if viewing football games (in particular Poland's national team) raised hospital admissions or emergency departments for chosen acute cardiovascular events (acute myocardial infarction [AMI], sudden cardiac arrest [SCA], sudden arrhythmias) among men in Poland [8]. The study involved 255,383 patients aged ≥35 years who were hospitalized with CVD during three big football championships: Euro 2012 (Poland/Ukraine), Euro 2016 (France), and the 2018 World Cup (Russia). During Euro 2012, no differences were observed for AMI and SCA, but a small decrease in arrhythmias (RR=0.95; P=0.02). During Euro 2016, no difference was noted for AMI and SCA, but an increase in arrhythmias (RR=1.05; P=0.02). In the 2018 FIFA World Cup, there was increased AMI in men aged 50–79 years (RR=1.2; 95% CI: 1.12–1.3; P<0.001), yet daily analysis revealed no excess risk on days that Poland played (vs. Senegal, Colombia, Japan). The authors suspected increased summer temperatures in 2018 and 2019 as a reason. No cumulative increase in the risk of acute cardiovascular events was noted for all the tournaments [8].

The purpose of the meta-analysis "The association between watching football matches and the risk of cardiovascular events: A meta-analysis", published in 2019 in Journal of Sports Sciences, was to establish if football viewing is associated with increased cardiovascular risk [9]. The authors were specifically interested in international high-stakes games that trigger intense emotional responses. Engaging games - particularly losses by the supporter's favourite team - were associated with higher heart attack rates. The risk was greater

following a loss than a victory. Certain studies identified a greater risk in men compared to women. Additional factors included smoking, alcohol, nutritional deficiency, and sleep disturbance during games [9].

The research "It is just a game: lack of association between watching football matches and the risk of acute cardiovascular events", published in 2010 in the International Journal of Epidemiology, sought to determine if the viewing of Italy's national team in major competitions (2002 World Cup, 2004 Euro, 2006 World Cup) was associated with a rise in hospitalization due to myocardial infarction [10]. The data from 25,159 hospital admissions were analysed. No relationship was found between match watching and risk of myocardial infarction (RR=1.01, 95% CI: 0.98–1.05), even for the emotionally arousing France-Italy 2006 World Cup final watched by 24 million Italians. No differences were found by match timing (morning, afternoon or evening) [10].

Prospective research "Cardiovascular events during World Cup soccer", printed within the New England Journal of Medicine in 2008, determined if emotional stress brought on by watching Germany's matches during the 2006 World Cup affected the incidence of acute cardiovascular occurrences in Bavaria [4]. Data regarding 4,279 patients revealed the greatest increase in CVD within 2 hours of match initiation. Winning or losing the game did not matter to risk—psychological distress was the variable, especially among those with underlying coronary disease [4].

In the paper "Watching soccer is not associated with an increase in cardiac events" by Niederseer et al., which appeared in the International Journal of Cardiology in 2013, the authors investigated if watching the 2006 World Cup matches of Germany caused an increase in acute cardiac events (STEMI, NSTEMI, cardiac arrest, arrhythmias) [11]. There was no hospitalization increase or any effect on match outcomes—nor was there an increase in the CVD rate with Germany's defeat by Italy (0:2) after extra time. Neither temperature, air pollution level (NO2 concentration), sex, nor age showed any appreciable effect on these parameters. No increase in events one day after the match was found in further analysis [11].

The article "Associations of cardiovascular disease morbidity and mortality in the populations watching major football tournaments", a systematic review and meta-analysis of observational studies, investigated the association between major football tournaments (MFTs) and cardiovascular disease (CVD) morbidity and mortality [5]. In 10 studies, a small but statistically significant increased risk of cardiovascular mortality was observed (RR=1.03; 95% CI: 1.00–1.05). Specifically, risk was increased when the national team lost (RR=1.19; 95% CI: 1.09–1.30) and decreased when the national team won (RR=0.88; 95% CI: 0.79–0.98). Furthermore, hospitalization due to acute cardiovascular disease was increased (RR=1.17; 95% CI: 1.01–1.36). The necessity of cardiovascular preventive initiatives and educational interventions was emphasized in the study [5].

The study "Cardiovascular mortality in Dutch men during 1996 European football championship: longitudinal population study", published by the British Medical Journal in 2000, was carried out with the aim of determining whether emotional stress due to an important match (quarterfinal Netherlands vs. France) could trigger heart attacks or strokes [20]. The study population included all the Dutch residents above the age of 45. Comparing June 17–27, 1996 with the respective periods in 1995 and 1997, the authors found significantly higher numbers of deaths in men due to AMI and stroke (41 versus a mean of 27.2; RR=1.51, 95% CI: 1.08–2.09). There was no difference in women, according to the scientists. The study indicated that such activities as excessive drinking, excessive eating, and smoking during matches might be triggering factors for acute CVD. Aspirin and beta-blockers can prevent these events in high-risk individuals [20].

The paper "A matter of life and death: population mortality and football results" in 2003 studied if the outcome of local football matches influenced cardiovascular death (acute myocardial infraction and stroke) in four areas in the north of England [12]. Examining 1,094 local games played between 1994 and 1999, the researchers discovered that following a home loss by a local team, AMI and stroke-related deaths among men rose by 28% (2.20 vs. 1.69 deaths/day; RR=1.28, 95% CI: 1.11–1.47; $p<0.001$). No significant increase was observed in women (RR=1.07; 95% CI: 0.93–1.24). The authors hypothesized that home loss may trigger emotional distress such as depression or anger in men, which would predispose them to acute coronary and cerebrovascular event [12].

In the article "The hazards of watching football - are Australians at risk?" in The Medical Journal of Australia in 2006, researchers analysed if cardiac risk was increased by stress from big football games in Australians [13]. They compared hospital admissions for the age group 15-74 over a 28-day period surrounding the Australia vs. Uruguay 2006 World Cup qualifier. There was no statistically significant increase in admissions for heart attacks (28 on the match day to 26.4 average; RR 0.96-0.73) or strokes (18 to 11.3 average-statistically not significant increase). This could have been because of reduced emotional engagement or biological reasons [13].

The paper "Admissions for myocardial infarction and World Cup football: database survey" in the British Medical Journal in 2002 examined if emotional stress induced by watching England's games during the 1998 World Cup resulted in increased admissions due to AMI, stroke, suicide attempts or road injuries [14]. It compared 81,433 patients who presented to hospital on match days and the two days following the match were analysed. The statistics were compared with the corresponding days in the month preceding the tournament and the same days in 1997 and 1999. On match day and in the two days following the dramatic England vs. Argentina match, there was a 25% increase in admissions for myocardial infraction (RR=1.25; 95% CL: 1.08-1.44). The increase was seen in both men (RR=1.27) and women (RR=1.16). There was no similar increase after the other England matches analysed. Similarly, there were no significant differences in the amount of hospitalisations for stroke, attempted suicides or road traffic accidents [14].

Discussion

The results of this narrative review demonstrate that emotional stress linked to viewing football games have the potential, in some circumstances, to serve as a trigger for acute cardiovascular events, especially among individuals with pre-existing risk factors. While none of the studies drew precisely the same conclusions and some indeed discovered no unequivocal associations at the population level, there are several key patterns that stand out.

To begin with, there is evidence that emotionally exciting games, particularly those that conclude with a suspenseful defeat of a popular team, are more apt to trigger cardiovascular occurrences like myocardial infarctions or arrhythmias. That effect seems to be enhanced for highly emotionally invested viewers who have been described in the literature as being intensely bonded with their teams. For instance, research such as “Central hemodynamics and arterial stiffness during the finals of the world cup soccer championship 2010” illustrated that there were quantifiable physiological reactions - e.g., heightened systolic blood pressure and heart rate—during emotionally exciting games, indicating the somatic component of spectator’s emotional involvement [7].

On the other hand, large population studies like those in Poland, Italy and Australia were not able to consistently reproduce a high rate of hospital admissions for acute cardiovascular events during football championships [8, 10, 13]. These variations are likely due to differences in study design, sample size, emotional excitement of the matches, and sociocultural differences in fan activity and participation.

Surprisingly, both meta-analyses and systematic reviews have identified a heightened cardiovascular mortality risk during major tournaments with, in particular, the loss of the national team, and a protective effect after its win [5, 9]. This suggests that emotional valence, either positive or negative, exerts a significant modulatory influence on cardiovascular risk.

Apart from emotional stimuli, behavioural and environmental determinants are involved. Watching games on TV is associated with adverse lifestyle behaviours such as alcohol use, smoking, unhealthy diet, and lack of exercise [1, 9, 20]. These too can be involved in underlying cardiovascular disease or serve as co-factors in the precipitation of the acute event.

The second dimension that is emerging is the individual psychological profile. Psychiatric disorders - depression, anxiety or affective dysregulation - can decrease the threshold for cardiovascular reactions to stress [12,17]. The interaction between mental status and physical vulnerability requires preventive interventions on an individual basis.

It must be remembered that not all stress is bad. A number of writers have pointed to the possible positive outcomes of football viewing, including social bonding, emotional release, and positive affect in the event of a victory. The problem, therefore, is not so much whether or not supporters must watch football, but how to mitigate the emotional and behavioural risks associated with it.

Lastly, public health initiatives - i.e., education, availability of medical staff and defibrillators in high-risk environments such as stadiums, and proper medical counselling for established CVD patients—can also reduce risks substantially. Pharmacologic prevention (i.e., aspirin, beta-blockers) in high-risk persons has also been suggested and demonstrated to be potentially beneficial in carefully selected individuals.

Conclusions

The relationship between the stress experienced by people while watching football matches and the risk of cardiovascular events is still controversial, and if any effect exists, it is unlikely to be large. Sudden cardiovascular events occurred more frequently in fans who were strongly bonded with their teams, that is, more emotionally engaged in watching the matches. Among other things, watching an important match with a dramatic course, ending in defeat and emotional disappointment, may lead to a significant increase in the number of heart attacks. Some authors suggest that, for health reasons, it may be worth avoiding even watching a series of penalty kicks [14].

Some studies suggest that this emotional involvement and intense strain in a dramatic match may be a triggering factor for acute cardiac events, regardless of the outcome of the game, whether it is a win or a loss [15,16]. Negative stress (e.g., a team's loss) can induce arrhythmias, heart attacks or cardiac arrests [5]. Accompanying mental health disorders, such as anxiety disorders, depression, anger, and affective disorders, may also influence an individual's tolerance of the stress related to watching football matches [17].

In some studies, it was suggested that the benefits of watching football games very likely exceed the potential risks [18]. Positive emotions (e.g., a win) may have a protective effect on the cardiovascular system [5]. The decrease in mortality from myocardial infraction might also be attributed to be the combined influence of a day off work, a national holiday, and the euphoria following the victory [19]. Even if the relationship between watching football games and the risk of cardiovascular events is questionable, people should be encouraged to cut down unhealthy behaviours during matches, such as drinking alcohol, smoking, overeating or prolonged sitting [6].

People who struggle with mental health disorders like depression or anxiety should be advised to communicate with their psychiatrists to receive counselling and care [6]. It is also suggested that in places where acute cardiac events might occur, like inside the stadiums or in fan zones, there should be appropriate precautions like defibrillators and people trained in their use [6]. Some studies even prove that drugs such as aspirin or beta-blockers may prevent acute cardiovascular events in high-risk subjects [20]

Although the direct causality of football viewing to cardiovascular events is not known, it has been established that strong emotional involvement - especially in highly publicized football games - may be a precipitating cause of acute cardiovascular events mainly in individuals with predisposing factors. Prevention and public health promotion should be directed at reducing behavioural risk factors and medical readiness in emotionally intense settings. Future studies should try to elucidate the contribution of individual susceptibility and situational factors to the modulation of cardiovascular risk in these situations.

Disclosure

Author's contribution:

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Methodology: Jacek Sitkiewicz
Software: Jacek Sitkiewicz, Łukasz Bialic
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