



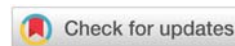
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Opinion

Aspirin is used to mitigate the increasing frequency of marathon-related cardiac arrests

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Male gender and the marathon were shown to be independent and significant risk factors for cardiac arrest in United States road races in a 10-year registry beginning in 2000, during which events increased in frequency during the latter half of the study [1]. Fifty-nine fatalities in runners with an average age in the mid-40s indicate excess pre-mature acute mortality despite an overall incidence of 1 per 100,000 participants.

The clinical significance of exercise-induced elevations in cardiac troponins in asymptomatic athletes remains unknown more than 20 years after being first reported in Boston marathon runners [2-4]. Prediction of acute cardiac events in patients with chest pain demonstrates the prognostic significance of this finding as shown by Ferencik M, et al. and supports the rationale for using low-dose aspirin to mitigate the increasing frequency of exertional cardiac arrests mainly in middle-aged males due to previously undiagnosed coronary atherosclerosis [5]. Asymptomatic Boston marathon physician-runners have been shown to cross the finish line with elevated cardiac and inflammatory biomarkers resembling patients with acute coronary syndrome [6]. A post-race hemostatic imbalance with pro-coagulant effects including *in vivo* platelet activation and elevated D-dimer levels also occurred, providing evidence for acute activation of atherothrombosis likely due to systemic inflammation following exertional rhabdomyolysis [7].

Elevated cardiac troponins have been shown to stratify risk for cardiac events including sudden death in endurance athletes, who are at enhanced risk for progressive Coronary

Artery Calcification (CAC) related to high levels of physical activity [8-10]. Such biomarkers and CAC scores are therefore useful for stratifying cardiac risk in asymptomatic male endurance athletes to guide evidence-based interventions to enhance primary prevention.

Low-dose aspirin use has been shown to decrease first acute myocardial infarctions in healthy middle-aged males by 44% in the final report on aspirin in the Physicians Health Study [11], a randomized controlled primary prevention trial. This intervention warrants expedited consideration as prudent for endurance athletes to reduce the transiently elevated risk for exertional acute cardiac events. As aspirin carries a class 1A recommendation for pre-hospital administration in cases of the acute coronary syndrome, pre-race usage complies with current guidelines in athletes who may develop chest pain during or after races.

The efficacy of this intervention to decrease the frequency of exertional cardiac events in susceptible recreational athletes might be assessed by a follow-up prospective registry once usage becomes accepted by runners upon support by the sports medicine community. Analogous to proposing prophylactic low-dose aspirin use for enhanced primary prevention in patients based on excess risk related to Pre-race aspirin use may offset the transiently elevated cardiac risk associated with strenuous exercise as this measure has been considered to counter the excess risk conferred by lipoprotein genotypes [12]. This benefit may accrue especially for the most experienced runners

who are at enhanced cardiac risk based on the exercise-related progression of coronary atherosclerosis [13].

Based on the findings in the Promise Trial [5], pre-race low-dose aspirin holds promise for mitigating exertional cardiac arrests related to coronary plaque rupture precipitated by exercise-induced activation of atherothrombosis. This strategy addresses the underlying cause of some exertional cardiac arrests, complementing efforts to reduce fatalities by deploying cardiac resuscitation capabilities along race courses.

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