Can pre-race aspirin prevent sudden cardiac death during marathons?

Arthur J Siegel,1,2 Timothy D Noakes3

Figure 1  Modern and ancient warriors.

As if reprising the index case of Pheidippides in 490 BC, the sudden cardiac death of a 32-year-old modern-day warrior at mile 20 in the 2016 London marathon mandates an expedited search to prevent such tragic events based on novel insights into the underlying cause (figure 1).1,2 Although the cardiac findings in this case have not been released, an acute coronary event is most likely as the most common cause of sudden cardiac death in men over the age of 30 years including among experienced runners in that event.3

While the overall incidence of sudden cardiac death during marathons is low, cardiac arrests occur in roughly 1 in 50 000 finishers.4 Based on 59 cases with a mean age of 42 years in a 10-year prospective registry of American road races since 2000, male sex and the marathon were the only significant risk factors for cardiac arrest.5 Atherosclerotic heart disease was the predominant underlying cause in same-aged runners in a concurrent Parisian registry.6 Marathon running thereby illustrates the triggering of acute myocardial infarction by strenuous exercise in middle-aged males with underlying non-obstructive coronary atherosclerosis.7

Rationale for targeted prevention

Supported by a 44% reduction in first acute myocardial infarctions in healthy middle-aged men in the Physicians Health Study, a randomised controlled primary prevention trial,8 the International Marathon Registry of American road races since 2000, age of 42 years in a 10-year prospective registry of American road races since 2000, male sex and the marathon were the only significant risk factors for cardiac arrest.5 Atherosclerotic heart disease was the predominant underlying cause in same-aged runners in a concurrent Parisian registry.6 Marathon running thereby illustrates the triggering of acute myocardial infarction by strenuous exercise in middle-aged males with underlying non-obstructive coronary atherosclerosis.7

The case for using prerace aspirin in middle-aged males

Given 285 040 US male marathoners over the age of 40 in 2015,9 IMMDA’s advisory warrants expedited attention given a greater than twofold increase in race-related cardiac arrests since 2005.10 We therefore encourage medical directors to follow Rio de Janeiro’s lead by informing entrants of IMMDA’s advisory, hoping to avert cardiac arrests as occurred at their last two races (personal communication, Paulo Alfonso Loriega de Menezes, MD, medical director, Rio de Janeiro marathon).

Prerace aspirin provides runners pre-emptively with the only pharmacological agent with a class 1A recommendation for pre-hospital administration in the event of an acute coronary syndrome. Such usage may reduce the increasing frequency of emergent post-race percutaneous coronary angioplasties and bypass surgery, as occurred after the most recent Boston and

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Chicago marathons. The lifetime benefit of reducing risk for sudden cardiac death through marathon training can be accomplished with attenuation of its transient risk during races (figure 2). The goal of reducing sudden cardiac death in middle-aged males during marathons is realistic in our view, having successfully curtailed race-related fatalities due to water intoxication in young females through a robust consensus process. As it is safe, inexpensive and readily available worldwide, aspirin is ready for prime time in middle-aged males as a high-risk subgroup. Based on a predominance of clinical evidence, this remedy, known to Hippocrates in the time of Pheidippides, may enhance the heroic dimensions of a sport celebrating his legacy by reducing re-encounters of his tragic demise.

Rationale

If aspirin conclusively prevents first myocardial infarctions in healthy middle-aged males, prerace aspirin may reduce such events during marathons.

MMDA recommendation

Long-distance runners, especially men over the age of 40, are advised in the absence of specific contraindications to take prerace aspirin if approved by their personal physician after discussion of its risks and benefits.

Contributors

Both authors contributed equally to the viewpoints in this editorial.

Competing interests

None declared.

Provenance and peer review

Not commissioned; externally peer reviewed.

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To cite

Siegel AJ, Noakes TD. Br J Sports Med Published Online First: [please include Day Month Year]. doi:10.1136/bjsports-2016-096917

Received 29 August 2016
Revised 8 May 2017
Accepted 16 May 2017
doi:10.1136/bjsports-2016-096917

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Br J Sports Med published online July 19, 2017

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