

## The Reply



We read with interest Dr. Siegel's letter and appreciate his on-going interest in the topic of cardiovascular disease and cardiac arrest in endurance athletes. Siegel appropriately references our prior work within the RACER registry,<sup>1</sup> and similar work within the US triathlon community,<sup>2</sup> that collectively establish atherosclerotic coronary disease as an important cause of cardiac arrest during endurance sports. We share his interest in this topic and are committed to a scientifically responsible approach to reduce the scope of this problem. However, we oppose a proposal for widespread coronary calcium scoring and universal aspirin prescription among endurance athletes for several reasons as delineated below.

With respect to coronary calcium screening, this tool carries useful prognostic information and assists with risk stratification in the general public,<sup>3–5</sup> not among aging endurance athletes. While long term participation in endurance sport may stimulate coronary artery calcification, this is currently a phenotype with no clear data-driven clinical relevance and as such, no actionable items. As we have previously discussed, coronary calcification in aging athletes may represent a distinct pathophysiology that carries a benign prognosis compared to the general population.<sup>6,7</sup> Aging athletes with established atherosclerotic risk factors including hypertension, dyslipidemia, or glucose intolerance need aggressive treatment for these issues independent of an Agatston score. In sports cardiology practice, we often see the downsides of ordering this test including misguided recommendations about medical management, coronary revascularization, and exercise restriction. Until a definitive role of coronary calcium scoring in master athletes is established, and indeed further research is warranted, we do not support routine screening in asymptomatic male athletes.

Aspirin for the primary and secondary prevention of atherosclerotic coronary disease is the standard of care and we recommend daily aspirin for athletes with established coronary disease and those with risk profiles to justify the small but significant risk of anticoagulation.<sup>8,9</sup> However,

prescribing aspirin to all endurance athletes is more likely to harm than to help. While coronary disease is an important cause of cardiac arrest during endurance sport participation, clinical angiographic and autopsy data collected from cardiac arrest cases during these events demonstrate no evidence of plaque rupture or an acute thrombotic etiology.<sup>1,2</sup> Alternatively, the majority of these cardiac arrests attributable to atherosclerosis are due to fixed high-grade stenosis and coronary myocardial ischemia. They typically occur in the context of a "finish line surge" when transient myocardial supply-demand mismatch is sufficient to trigger a malignant ventricular arrhythmia. While aspirin may be beneficial in myocardial infarction attributed to plaque rupture, a process that has been described among high-risk runners in the post-race setting,<sup>10</sup> the impact of aspirin on cardiac arrest incidence during endurance sports would likely be limited. In addition, although the incidence of aspirin side effects is low, it is not trivial with complications including life-threatening anaphylaxis.<sup>11</sup> Therefore, when considering the 'number needed to harm', the proposed scenario of tens of thousands of low risk athletes taking an unnecessary aspirin on race morning will undoubtedly do more harm than good. For now, we endorse the use of aspirin when clinically indicated, independent of a patient's athletic habits, and not a casual supplement to be downed by every athlete who laces up on the morning of a race.

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