

# Atrial fibrillation in athletes

Derek Crinion MD, Adrian Baranchuk MD

■ Cite as: *CMAJ* 2020 January 13;192:E40. doi: 10.1503/cmaj.191209

*CMAJ* Podcasts: author interview at <https://soundcloud.com/cmajpodcasts/191209-five>

## 1 Too much exercise can cause atrial fibrillation

Large observational studies have shown that a sedentary lifestyle increases the risk of atrial fibrillation fivefold.<sup>1,2</sup> However, high-intensity aerobic exercise, especially for men, also increases the risk of atrial fibrillation at a threshold of more than 1500–2000 lifetime hours.<sup>3</sup> Evidence is less clear for women.<sup>3</sup> In the majority of athletes, atrial fibrillation is paroxysmal and symptomatic.<sup>2,3</sup>

## 2 The causes of atrial fibrillation in athletes are multifactorial

High-intensity aerobic exercise causes increased hemodynamic stress and generates free radicals.<sup>4</sup> The atria appear to be particularly susceptible, with resultant dilatation, chronic inflammation and fibrosis.<sup>2–4</sup> Autonomic modulation also plays a role, and athletes commonly describe triggers that are vagally (sleep, meals) or adrenergically (exercise) mediated.<sup>2,3</sup>

## 3 Other causes of atrial fibrillation should be considered and thromboembolic risk assessed

It is important not to miss conditions associated with atrial fibrillation, including cardiomyopathies, channelopathies, pre-excitation, hyperthyroidism and alcohol or drug misuse.<sup>2,3</sup> Energy supplements and performance enhancers should also be considered.<sup>2,3</sup> Data on stroke risk among athletes are limited, but the use of thromboembolic risk scores (CHADS-65) is recommended.<sup>2,3,5</sup>

## 4 Management of atrial fibrillation in athletes poses unique challenges

In nonrandomized studies, detraining has been shown to reduce atrial fibrillation, although athletes are often not willing to do this.<sup>2</sup> Anti-arrhythmic medications are limited by bradycardia, impaired performance, long-term adverse effects and risk of ventricular arrhythmias during exercise.<sup>2,3</sup> High-impact sports are a contraindication to anticoagulation.<sup>2,3</sup>

## 5 Ablation of atrial fibrillation is increasingly offered as first-line therapy

Data remain limited to small, nonrandomized studies, but ablation is often the preferred option for symptomatic athletes.<sup>2,3</sup> Despite the distinct pathophysiology between symptomatic athletes and nonathletes, success rates appear similar to those of nonathletes: about 60% for the first procedure and > 80% for the second.<sup>2,3</sup> Athletes not meeting CHADS-65 criteria must be informed of the need for anticoagulation for at least 2 months owing to the prothrombotic effect of catheter ablation.<sup>2,5</sup>

## References

1. Qureshi WT, Alirhayim Z, Blaha MJ, et al. Cardiorespiratory fitness and risk of incident atrial fibrillation: results from the Henry Ford Exercise Testing (FIT) Project. *Circulation* 2015;131:1827–34.
2. Calkins H, Hindricks G, Cappato R, et al. 2017 HRS/EHRA/ECAS/APHS/SOLAECE expert consensus statement on catheter and surgical ablation of atrial fibrillation. *Heart Rhythm* 2017;14:e445–94.
3. Estes NAM III, Madias C. Atrial fibrillation in athletes: a lesson in the virtue of moderation. *JACC Clin Electrophysiol* 2017;3:921–8.
4. Guasch E, Benito B, Qi X, et al. Atrial fibrillation promotion by endurance exercise: demonstration and mechanistic exploration in an animal model. *J Am Coll Cardiol* 2013;62:68–77.
5. Andrade JG, Verma A, Mitchell LB, et al.; CCS Atrial Fibrillation Guidelines Committee. 2018 focused update of the Canadian Cardiovascular Society guidelines for the management of atrial fibrillation. *Can J Cardiol* 2018;34:1371–92.

**Competing interests:** None declared.

This article has been peer reviewed.

**Affiliation:** Heart Rhythm Service, Kingston Health Sciences Centre, Queen's University, Kingston, Ont.

**Correspondence to:** Adrian Baranchuk, [Adrian.Baranchuk@kingstonhsc.ca](mailto:Adrian.Baranchuk@kingstonhsc.ca)

*CMAJ* invites submissions to “Five things to know about ...” Submit manuscripts online at <http://mc.manuscriptcentral.com/cmaj>