



NEWS RELEASE

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High Levels of Intense Exercise May Be Unhealthy for the Heart **More Research Needed Into the Effect of Intense Exercise on Heart Structure and Function,** **According to Sports Cardiologist Writing in the *Canadian Journal of Cardiology***

Philadelphia, PA, February 25, 2016 – There is growing evidence that high levels of intense exercise may be cardiotoxic and promote permanent structural changes in the heart, which can, in some individuals, predispose them to experience arrhythmias (abnormal heart rhythm). A review published in the *Canadian Journal of Cardiology* explores current controversies and makes the case for investing in large prospective research studies into the effect of intense exercise on heart structure and function.

There are unquestionable benefits to “getting off the couch.” However, there is already fairly compelling evidence supporting the association between long-term sports practice and increased prevalence of atrial fibrillation, and the fact that this relates to chronic altered atrial substrate. Without challenging the undeniable evidence supporting low and moderate intensity exercise, this review by sports cardiologist André La Gerche, MD, PhD, provides a balanced discussion of the available data for and against the concept that intense exercise, particularly endurance exercise, may cause adverse cardiac changes in some athletes.

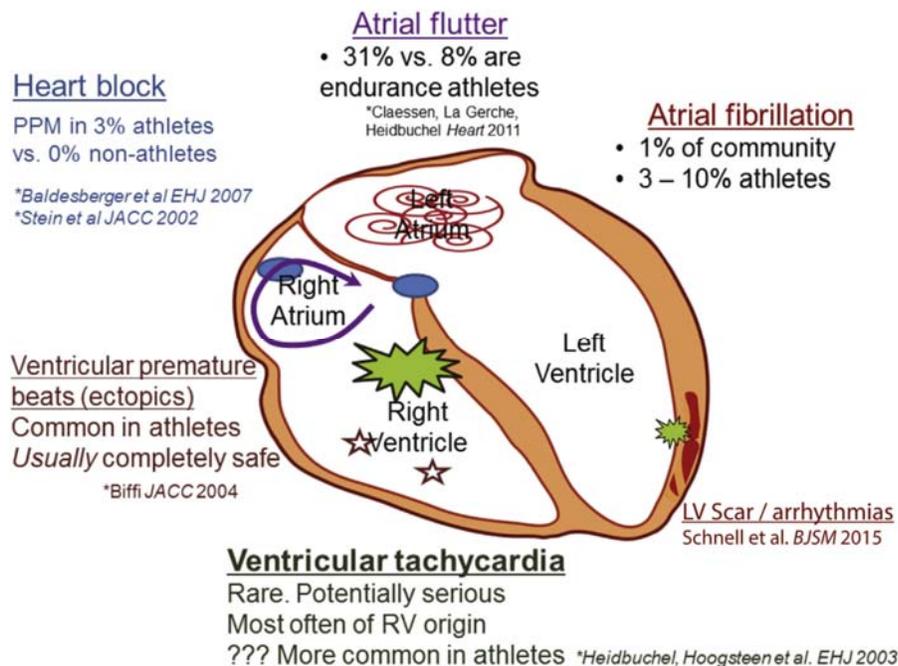
“Much of the discussion regarding the relative risks and benefits of long-term endurance sports training is hijacked by definitive media-grabbing statements, which has fueled an environment in which one may be criticized for even questioning the benefits of exercise,” explains Dr. La Gerche, who is Head of Sports Cardiology at the Baker IDI Heart and Diabetes Institute, Melbourne, Australia. “This paper discusses the often questionable, incomplete, and controversial science behind the emerging concern that high levels of intense exercise may be associated with some adverse health effects.”

As Dr. La Gerche points out, all available therapies, pharmacological or otherwise, have a dose-response relationship whereby benefits diminish at high doses and the risk of adverse events increases. An open mind would consider that this may even be possible for exercise.

A commonly held view is that adverse clinical events in athletes are explained by exercise acting as a trigger in individuals who are susceptible because of an underlying abnormality. Dr. La Gerche excludes inherited conditions from this discussion, focusing instead on whether exercise may affect a change in the

heart that may serve as a cause of arrhythmias in its own right. He reviews the following emerging controversies:

- Is there a non-linear dose-response relationship with exercise?
- Elite athletes tend to live longer but is this the effect of exercise or other factors such as the absence of smoking and alcohol consumption?
- Is endurance exercise in athletes associated with arrhythmias?
- What are the potential mechanisms that predispose athletes to arrhythmias?
- Is chronic cardiac remodelling a consequence of repeated bouts of injury?
- Why is there disproportionate right ventricular (RV) injury following an acute bout of intense exercise and are there any long-term consequences?
- Is the risk of ischemic heart disease increased with intense exercise?



Caption: Increased incidence of arrhythmias in the athlete's heart. There is a well demonstrated association between atrial fibrillation and/or flutter and endurance exercise training. There is also an increase in premature ventricular beats, although this tends to be benign in most athletes. Although there is some speculation that extreme exercise might cause serious arrhythmias in some cases, these events remain very uncommon. PPM, permanent pacemaker; RV, right ventricular.

Many of these controversies are based on small cross-sectional cohort studies and small mechanistic studies that are dwarfed by the large population studies supporting the benefits of exercise, albeit in doses of exercise less than those commonly practiced by elite sportspersons, notes Dr. La Gerche.

“The answers regarding the healthfulness of ‘extreme’ exercise are not complete and there are valid questions being raised,” continues Dr. La Gerche. “Given that this is a concern that affects such a large proportion of society, it is something that deserves investment. The lack of large prospective studies of persons engaged in high-volume and high-intensity exercise represents the biggest deficiency in the literature to date, and, although such work presents a logistical and financial challenge, many questions will remain controversies until such data emerge.”

NOTES FOR EDITORS

“The potential cardiotoxic effects of exercise,” by Andre La Gerche, MBBS PhD (DOI: <http://dx.doi.org/10.1016/j.cjca.2015.11.010>). Published online in advance of Volume 32/Issue 4 (April 2016) of the *Canadian Journal of Cardiology*, published by Elsevier.

Full text of this article and editorial is available to credentialed journalists upon request. Contact Eileen Leahy at 732-238-3628 or cjcmedia@elsevier.com to obtain copies. Journalists who wish to speak with Dr. La Gerche should contact him at +61 3 8532 1143 or Andre.LaGerche@bakeridi.edu.au.

ABOUT THE CANADIAN JOURNAL OF CARDIOLOGY

The *Canadian Journal of Cardiology* (www.onlinecjc.ca) is the official journal of the Canadian Cardiovascular Society (www.ccs.ca). It is a vehicle for the international dissemination of new knowledge in cardiology and cardiovascular science, particularly serving as a major venue for the results of Canadian cardiovascular research and Society guidelines. The journal publishes original reports of clinical and basic research relevant to cardiovascular medicine as well as editorials, review articles, case reports, and papers on health outcomes, policy research, ethics, medical history, and political issues affecting practice.

ABOUT THE EDITOR-IN-CHIEF

Editor-in-Chief Stanley Nattel, MD, is Paul-David Chair in Cardiovascular Electrophysiology and Professor of Medicine at the University of Montreal and Director of the Electrophysiology Research Program at the Montreal Heart Institute Research Center.

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The Canadian Cardiovascular Society is the professional association for Canadian cardiovascular physicians and scientists working to promote cardiovascular health and care through knowledge translation, professional development, and leadership in health policy. The CCS provides programs and services to its 1900+ members and others in the cardiovascular community, including guidelines for cardiovascular care, the annual Canadian Cardiovascular Congress, and, with the Canadian Cardiovascular Academy, programs for trainees. More information about the CCS and its activities can be found at www.ccs.ca.

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