CORRESPONDENCE

Competitive Sports and the Heart: Benefit or Risk?

by PD Dr. med. Jürgen Scharhag, Prof. Dr. med. Herbert Löllgen,
Prof. em. Dr. med. Wilfried Kindermann in volume 1–2/2013

Contradictory Statements

The article by Scharhag et al. offers a plethora of information, but I am missing a concrete value for a healthy limit to endurance exercise.

The section on changes to the ECG contains two apparently contradictory statements:

- Atrial fibrillation is more common among middle-aged and older endurance athletes than it is among athletically inactive persons of the same age.
- On the other hand, it has been found that moderate endurance training, as performed in preventive-fitness programs, may actually lower the risk of atrial fibrillation in old age.

The only explanation for this contradiction is the intensity of the endurance exercise. More intense training is more likely to result in overstretching of the left atrium. Atrial remodeling then enables atrial fibrillation. Medicine can define clear threshold values for blood pressure, pulse rates, and cholesterol concentrations. For me as a general practitioner it would be very important to know a definite threshold value for healthy physical endurance exercise. What can I recommend to my patients as moderate endurance exercise?

Research is currently not able to provide evidence based data to answer this question, which is relevant for routine clinical practice. Many years ago, the campaign "Trimm dich [get fit] Aktion 130" was launched. However, a general pulse rate of 130 for everyone is not differentiated enough and probably not scientifically supported either. I would welcome definitive values, based on age and weight. To this end, age-dependent performance in watts/kg body weight could be used. Even more simply, an endurance exercise threshold could be given as a percentage of the maximum age-related pulse rate. This could form the basis for future studies.

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In Reply:

First of all, it is important to distinguish between competitive sports and preventive sports. "Atrial fibrillation is more common among middle-aged and older endurance athletes who have been training for many years" (1) (age in [2]: 51±9 years). In athletes training preventively and at a medium intensity, atrial fibrillation occurs more rarely in those older than 65 years than among athletically inactive persons or active persons exercising at high intensities (3). A U-shaped curve may therefore be assumed with regard to the association between atrial fibrillation and exercise intensity (3). However, the underlying causes are mostly unknown, and several aspects are subject to discussion or speculation, some of which we mentioned in our article. Since it is not possible in the context of competitive sports to conduct randomized controlled trials or interventional investigations in healthy athletes, only well designed and planned prospective longitudinal studies will be able to shed any light on this subject in future.

No age- and weight-related limits exist with regard to the recommended exercise intensity in athletes pursuing preventive exercise. A value given as watts/kg body weight is suitable only for cyclists with the relevant (and expensive) equipment, or exercise on bicycle ergometers. A general threshold value as a percentage of the maximum age-related pulse rate is not advisable since this does not take into consideration individuals' exercise capacity nor the individual variance of the maximum heart rate. Precise training recommendations for endurance exercise can be deduced from an exercise ECG with individual default values for the heart rate. This is recommended particularly for patients who require an upper heart rate limit as their exercise threshold (for example, participants in cardiac rehabilitation exercise). For healthy preventive athletes, no such heart rates are necessary. They should run at such a speed that they are still able to speak, although occasional intervals of higher intensity are feasible. According to current recommendations, preventive endurance exercise should be undertaken 3–5 times per week, for 30–60 minutes.

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Conflict of interest statement
The authors of all contributions declare that no conflict of interest exists.