

# Long-term endurance sport practice increases the incidence of lone atrial fibrillation in men: a follow-up study

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## Introduction

The study is aimed to determine the incidence of lone atrial fibrillation in males according to sport practice levels and to identify possible clinical markers that increase the risk of lone atrial fibrillation (LAF) among marathon runners.

## Methods

A retrospective cohort study was designed with a group of 252 marathon runners recruited in 1990-92 and a population sample of 305 sedentary men recruited in 1994-96. The physical activity was evaluated with the Minnesota leisure time physical activity questionnaire. At the recruitment moment, a physical examination, a BP measure and an ECG were performed in all men. A maximal exercise test and an echocardiogram was obtained only in the marathon runners. They were all contacted in 2002-03 and invited to attend an outpatient clinic to identify suggestive symptoms of having experienced an arrhythmia requiring medical attention. In those with suggestive symptoms of atrial fibrillation, medical records were reviewed. Finally, LAF was diagnosed on the basis of the presence of atrial fibrillation in an electrocardiogram in the absence of structural heart disease and other identifiable cause of arrhythmia (i.e. alcohol, hyperthyroidism). In the group of marathon runners, a second two-dimensional echocardiogram was obtained at the end of the follow up. Moreover, a new ques-

tionnaire to access the lifetime total physical activity practice was administered.

## Results

Of the initial 252 marathon runners, 183 completed the follow up (72.9%) with a mean follow up of 11.6 years, while 290 (95.7%) of the 305 eligible sedentary men concluded the follow up with a mean follow up of 6.4 years.

Marathon runners were younger and showed lower BMI, heart rate, blood pressure and higher consumption of alcohol, smoking prevalence and leisure time physical activity than the sedentary men. The annual incidence rate of LAF among marathon runners and sedentary men was 0.43/100 and 0.11/100, respectively. Only paroxysmal or persistent LAF was recorded, and any atrial flutter episode was recorded during the follow up. The only statistically significant difference between participants with and without lone atrial fibrillation was that those with the arrhythmia were thinner and practiced more physical activity. In the group of marathon runners, the only statistically difference between groups according to the presence of LAF, was the left atrial size measured in the follow up echocardiogram. Left atrial inferior superior diameter and left atrial volume were both associated with a higher risk of incident LAF. Endurance sport practice was associated with a higher risk of incident LAF in the multivariate age- and blood pressure-adjusted

Cox regression models (HR = 8.80; 95% confidence interval: 1.26-61.29)

### Conclusion and Comment

While an active lifestyle improve overall health, this study demonstrate that the long-term endurance sport practice is associated with a higher risk of symptomatic LAF in men. Moreover, the risk of LAF is associated with a larger left atrial infero-

superior diameter and volume in physically active subjects. The atrial dilatation, may be a consequence of increases in preload, autonomic changes (i.e. increased vagal tone) and inflammatory changes due to sports participation. Treatment for the athletes with LAF has not been described previously, but catheter ablation is emerging as a potential cure for LAF, especially in symptomatic athletes with impaired athletic performance and poor quality of life.