Background: Atrial fibrillation/flutter (AF) is associated with poorer outcomes and quality of life than sinus rhythm [1, 2]. Recent research has reported an increased incidence of AF in endurance exercises such as marathons [3, 4] in spite of an improved cardiovascular outcome with exercise [5-7].

Objective: In this study, we aimed to compare the incidence of AF in marathon runners versus the general population.

Methods: This was a prospective case-control study. Runners were local runners who ran the local Med City Marathon between May 2000 and May 2015. A local control population was selected over a similar timeframe from a cohort of patients who had stress testing at Mayo Integrated Stress Center. Both groups were prospectively followed until the end of January 2016 for occurrence of incident AF. We used a Cox proportional hazard regression to determine the risk of AF among marathoners after adjusting for confounding factors including: age, BMI, female sex, diabetes, hypertension, chronic kidney disease, coronary artery disease, valvular heart disease, sleep apnea, functional aerobic capacity and beta-blocker use.

Results: There were 378 marathoners (mean age 38.1 ± 10.8, 37% female) and 14,073 controls (mean age 53.0 ± 13.5, 38.9% female). Over a median follow-up of 14 (8-17) years, the incidence of AF was 1.86% and 12.34% in marathoners and controls, respectively. On proportional regression modeling, after adjusting for age, sex, body mass index, diabetes, hypertension, current smoking status, chronic kidney disease, coronary artery disease, valvular heart disease, sleep apnea, and use of beta-blockers, marathoners' risk of AF was not increased (HR 1.27, 95% CI: 0.62-2.68, p=0.53). Sensitivity analysis with low-risk controls (n=347) showed that marathon running was still not a significant risk factor for development of AF (HR 1.44, 95% CI: 0.68-3.03, p=0.34).

Conclusions: While many previous papers have reported an increased risk of AF with endurance exercise, they were often not well-controlled for confounding factors, had small populations, and did not include women who have a lower AF risk. Based on our data, marathon running does not increase the risk of AF.

Table 1: Co-Morbidities in the 7 Marathoners who Developed Atrial Fibrillation

<table>
<thead>
<tr>
<th>Marathoner</th>
<th>Co-Morbidities</th>
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<tbody>
<tr>
<td>1</td>
<td>Previous MI with aneurysm formation, further PCI, hyperlipidemia</td>
</tr>
<tr>
<td>2</td>
<td>Grave’s disease-associated atrial fibrillation</td>
</tr>
<tr>
<td>3</td>
<td>Sleep apnea, diabetes, cryptogenic stroke</td>
</tr>
<tr>
<td>4</td>
<td>Hyperlipidemia, diabetes</td>
</tr>
<tr>
<td>5</td>
<td>Holiday heart and excess caffeine use, both of which brought on his AF episodes</td>
</tr>
<tr>
<td>6</td>
<td>Hypertension, atrial fibrillation and a venous teratoma</td>
</tr>
<tr>
<td>7</td>
<td>No additional co-morbidities</td>
</tr>
</tbody>
</table>

References