Reviewer’s report

Title: Does cycling make the heart flutter? Six year follow-up of the Taupo Cycle Challenge

Version: 2

Date: 7 August 2014

Reviewer: Lluis Mont

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Woodward et al, have studied a population of cyclist prospectively, in order to determine whether cycling was associated with an increased risk of atrial fibrillation, as compared to the general population of the same age. In short they found no association at variance of the majority of previous studies. They explain the lack of association, by saying that cyclist involved in the Tauto race are not so intensively trained, as compared to athletes recruited in previous studies, but fail to demonstrate that. In general, the hours and Km per week in that population are also high and comparable to other populations where a clear association has been met. Our report at Eur Heart J 2002 (Mont et al) included patients seen because of lone AF, and most of them were really not highly trained competitive athletes. Others, like Aizer et al reference 9, also found in the Physicians Health Study, that more than 5 hours a week of regular endurance training increased the risk. What is also surprising is that the authors did not find any relationship with the cumulative time and the risk of AF. In fact, Elosua et al, Int J Cardiol 2007, reported initially that > 1500 hours of cumulated endurance training started to raise the risk, and there was a cumulative effect. This finding has been corroborated in other studies. (Mont et al, Europace 2008, 10:15). A very large population based study, Drca et al Heart 2014, has shown that the level of physical activity declared at the age of 30, is associated with the risk of AF, particularly, again > 5 hours a week, at the age of 30. On the contrary, exercise related to daily life (walk, or cycling as transportation) was protective.

I think that the most probable explanation for the findings is an unwanted and undetected selection bias. In fact, only 43% of the potential participants entered the study, and 59% of them completed the follow up. The characteristics of those not entering the study could obviously not be determined, but, the ones answering could have higher education, or different cultural or social class, or psychological characteristics. This important potential bias, certainly limits the credibility of the findings, especially when they are against the majority of previous studies.

The authors mention that the metaanalysis of reference 7, did not found a relationship either, but this metaanalysis has important limitations, including for example the Danish study analyzing only exercise at work activity, or the Mozzafraian et al cohort, that included only patients over 65. In any case, there are many more studies supporting the positive association of endurance training and AF and flutter and the discordant results of the present work should be interpreted with caution.
minor comments.
1. The authors should rephrase the title and talk about atrial fibrillation and not, atrial flutter, since in the paper they refer to atrial fibrillation.
2. The introduction is too long,
3. Page 3, line 2, most of the papers in the metanalisis are case-control studies and the incidence of AF does not refer to general population, but to controls.
4. The tables could not be seen complete in the PDF format

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**
I declare that I have no competing interests