



Physical Inactivity Among Older Adults with Atrial Fibrillation: Prime Time to Get Active!

Sharma Kattel¹, Rachel Lampert¹

¹Division of Cardiovascular Medicine, Yale School of Medicine New Haven, CT

Introduction

Atrial fibrillation (AF) affects more than 3 million Americans, with estimated prevalence of nearly 10% in 65 years and older¹. The prevalence of the disease increases steeply in the elderly, affecting nearly 12% in 75–84 years, and approximately 1/3 in 80 years or older. The current estimated global burden of the disease is more than 33.5 million². With increasing disease incidence by approximately 5 million each year worldwide, there is urgent need to identify and address associated risk factors³. In the recent CABANA trial, with over 2100 patients, the median Atrial Fibrillation Effect on Quality of Life (AFEQT) score was just 63 (Interquartile 25–75%: 48–80) suggesting more than 75% of the patients were moderate to severely symptomatic affecting their quality of life⁴. The toll of AF in overall health and quality of life that it poses cannot be overemphasized.

Over the last two decades, our understanding on AF has much advanced and a number of risk factors have been identified^{1,5}. While some risk factors are non-modifiable such as age, male gender, single or polygenic (heritable or de-novo) inheritance, important modifiable risk factors have also been identified. In addition to metabolic syndrome, obesity, sleep apnea, hypertension, chronic kidney disease, diabetes mellitus, cigarette smoking, and depression, physical inactivity has been identified among the most potent modifiable risk factor^{1,6}. In a the CARDIO-FIT study, Pathak et al have shown that employing a tailored exercise program designed for age and physical ability involving combination of aerobic and resistance/strength exercises for progressive fitness, every METs gained from baseline was associated with 9% decline in risk of AF recurrence⁷. Hence the role of risk factors management including structured moderate physical activity and weight loss cannot be over stated.

In this issue of JAFIB, Mehawej, J et al report on factors associated with lower levels of moderate intensity physical activity in a cohort of elderly patients. Assessing physical activity in real life is challenging

as it is associated with inaccuracies and often exaggerated due to recall bias. A strength of the study is the use of the Minnesota Leisure Time Physical Activity questionnaire to assess the level of physical activity⁸. This instrument has been validated and correlates positively with level of cardiorespiratory fitness⁹. The use of the Cardiovascular Health Study frailty scale is another strength of the study. This instrument was developed based on the Cardiovascular Health Study, where frailty phenotype (defined as presence of ≥ 3 : unintentional weight loss, self-reported exhaustion, weakness, slow walking speed and low physical activity) was independently predictive of incident falls, worsening mobility, hospitalization and deaths (adjusted HR: 1.29–2.24)¹⁰. Depending on the tool of assessment, prevalence of frailty has been described in up to 75% of the elderly patients with AF¹¹. Evaluating frailty in patients with AF is important as it has been associated with increased mortality, higher symptom burden, poor success to ablation therapies, and higher incidence of bleeding on oral anticoagulation^{11,12}.

Another strength of this study is the gender makeup of the population, with nearly 50% of the study participants being women. While the age adjusted prevalence of AF in US has been reported to be 0.9% in females compared to 2.4% in male, female gender has been underrepresented in the majority of major clinical trials¹³. In the CABANA trial assessing the effect of catheter ablation vs medical therapy on quality of life in AF patients, only 37% of the subjects were female⁴. Similarly, in the HUNT study, assessing the physical activity and cardiovascular outcome in AF patients, only 31% were females¹⁴. The Cardiovascular Health Study which assessed the physical activity and incidence of AF in older adults had better female participation, about 56%. In that study women had lower rate of participation in recommended physical activity and were older compared to males^{14,15}. It is important to highlight that the level of physical activity can have gender specific impacts on outcome. In a recent meta-analysis, women were shown to benefit from all level of physical activities, whereas in males, up to moderate physical activity was beneficial but vigorous activities were associated with higher incidence of AF¹⁶.

Corresponding Author:
Rachel Lampert, MD
Yale School of Medicine,
New Haven, CT.

As in most trials, African American, Asian American and Hispanics are underrepresented in this study also. With little data, the true incidence and prevalence of the disease in these population is hard to ascertain. Despite higher prevalence of known risk factors as hypertension, obesity, diabetes in African Americans and Hispanics, the incidence of AF may be lower in these population although these populations are underrepresented in majority of trials and population-based studies¹. In The Cardiovascular Health Study assessing physical activity and incidence of AF in older population, only 17% of the participants were nonwhite¹⁵. Even in the Multiethnic Study of Atherosclerosis (MESA), only 42.9% of the participants were non-white highlighting the disparity in representing these population, with AF incidence of 3.4% over a median follow-up of 5.3 years¹⁷.

Too many Americans are sedentary. In a Center for Disease Control (CDC) survey from 2014, nearly 27% of individuals between ages 65-74 years old and nearly 35% aged ≥ 75 years old were physically inactive or reported no physical activity outside of their work¹⁸. In current study by Mehawej, J et al, the results are even more sobering as nearly 50% of the adults above 65 years are engaged in less than the recommended physical activity. Regardless, both of these studies highlight the importance of exercise as a readily available tool that is highly effective in improving AF outcomes yet is much underutilized. In the same CDC survey, as the number of chronic diseases, identified as stroke, coronary heart disease, arthritis, cancer (excluding skin cancer), chronic obstructive pulmonary disease (COPD) and depression burden increased, the level of physical activity was more limited¹⁸. Besides the CDC identified risk factors for reduced physical activity in elderly population, the investigators have identified factors pertaining to elderly AF patients that includes morbid obesity, renal disease, slow gait speed, cognitive impairment and social isolation.

As in any cross-sectional study, it is a limitation that direction of cause-and-effect can not be determined and relationships may be complex. Obesity has been associated with poor self-esteem, depression, and social isolation which in turn likely limit the much-needed physical activity in these patients and perpetuate obesity and its related complications¹⁹. On the other hand, there is increasing evidence that depression and physical inactivity interact in both directions leading to poor cardiovascular health outcomes²⁰.

This study has clearly identified that physical inactivity is rampant in elderly patients with AF. How to improve this? In patients with multiple forms of cardiovascular disease including acute myocardial infarction, congestive heart failure, coronary artery bypass and open-heart surgery, cardiac rehabilitation programs with graded exercise are safe and effective. A number of smaller studies have shown cardiac rehabilitation in patients with AF is also safe and effective in improving cardiovascular outcomes^{7,21,22}. As evidence builds of the safety and efficacy of moderate intensity physical activity in patients with AF, it is prime time to institute it in our practice. Increasing awareness of potential benefits of physical activity in this population is critical. Adults who remain physically active in their mid-life are likely to remain active and have better health outcomes later in their

life so promoting these activities in early or mid-adulthood will have a lasting impact in our growing elderly population²³. As shown by Pathak R et al, aggressive risk factors reduction such as weight loss, moderate intensity physical activity, blood pressure, lipid and sleep disorder management were associated with long term arrhythmia free survival²⁴. Programs designed to engage individuals at community level such as community fitness programs, peer delivered physical activity, neighborhood group walks programs can be effective to encourage physical activity and break social isolation to improve cardiovascular health outcomes^{25,26}. Also, similar programs to increase awareness and incorporate routine scheduled physical activities in long term care facilities can benefit substantial elders as approximately 6% of the US population get help or live in some form of assisted or long-term care facilities.

It has been reported that excessive endurance activities can lead to increased incidence of AF. But how much should we be concerned about urging increasing activity, given the evidence that "excessive endurance exercise" can worsen AF? In Finnish veteran orienteers with history of high endurance activity (an average military training history of 36 years), the incidence of lone AF was 5.3% compared to control of 0.9% and those between the age of 63-70 years had an incidence of 6.6%²⁷. In a study of elderly Norwegian men between the age of 65-90 years with history of long-term endurance sport (average 33 years of systematic endurance training, in average competed 17 cross-county ski races) had 6% (95% CI: 0.8-11.1) added risk compared to general population of the similar age group²⁸. These vigorous activities included long range cycling, marathon running and high endurance sports, are not applicable to most of our elderly patients²⁹. Several studies have shown a U-shaped response with the intensity of physical activity and increased risk of AF when cumulative hours of vigorous endurance sports activity are $>1500-2000$ hours or >5 hours per week³⁰⁻³². Very few elderly patients are engaging in these high levels of endurance activity. While recognizing this impact is important for the tiny minority of AF patients who run marathons or involve in high endurance activity, for the vast majority of our patients, helping them get off the couch and get moving is one of the most important interventions we can offer.

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