Lone atrial fibrillation (AF) is the most common arrhythmia of the heart and is considered to have a higher prevalence in athletes, especially in endurance sports. We conducted an extensive literature research in PubMed using the keywords sports and atrial fibrillation. The majority of studies have methodological limitations due to different inclusion criteria, such as age, type of sport, training level as well as statistical bias. The inconsistency of data is reflected by the considerable range of AF occurrence, spanning from 0.3 to 12.8%. We consider it reasonable to separate a study population into sedentary individuals, leisure time sportsmen/women and elite athletes. A distinction between the categories may be achieved through a combination of exercise history, capacity (e.g., MET hours/week, e.g., VO2max) and competitive results. Since there is a large span in the analyzed age groups (24-84 years), we claim that the focus should be laid upon the 45- to 65-year-olds due to a sound detection rate of true positives. Finally, we discuss ways to increase the detection rate of paroxysmal AF and comment on new therapeutic options.