

Introduction to the “Seattle criteria”

Cardiovascular-related sudden death is the leading cause of mortality in athletes during sport. The majority of disorders associated with increased risk of sudden cardiac death (SCD), such as cardiomyopathies and primary electrical diseases, are suggested by abnormal findings present on a 12-lead electrocardiogram (ECG).

ECG interpretation in athletes requires careful analysis to properly distinguish physiologic changes related to athletic training from findings suggestive of an underlying pathologic condition. Whether used for the diagnostic evaluation of cardiovascular-related symptoms, a family history of inheritable cardiac disease or premature SCD, or for screening of asymptomatic athletes, ECG interpretation is an important skill for physicians involved in the cardiovascular care of athletes.

Distinguishing Normal from Abnormal

A challenge in the interpretation of an athlete’s ECG is the ability to accurately differentiate findings suggestive of a potentially lethal cardiovascular disorder from benign physiologic adaptations occurring as the result of regular, intense training (i.e., athlete’s heart). This issue is particularly challenging in consideration that sports medicine and cardiology training programs in most University in the world lack a standard educational curriculum on ECG interpretation in athletes.

Indeed, there is a largely perceived concern that poor ability of many physicians to accurately interpret an athlete’s ECG may lead to an unacceptable rate of false-positive interpretations and unnecessary secondary evaluations. Therefore, physician’s education in ECG interpretation is needed to improve their skill in this challenging task.

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On February 13-14, 2012, a “Summit on Electrocardiogram Interpretation in Athletes” was held in Seattle, Washington. Partnering medical societies included the American Medical Society for Sports Medicine (AMSSM), the FIFA Medical Assessment and Research Center (F-MARC), the European Society of Cardiology (ESC) Sports Cardiology Subsection and the Pediatric & Congenital Electrophysiology Society (PACES), as well as other leading cardiologists on ECG interpretation in athletes from the United States, Europe, and around the world.

The consensus recommendations developed are presented in three papers:

- *Normal Electrocardiographic Findings: Recognizing Physiologic Adaptations in Athletes*
- *Abnormal Electrocardiographic Findings in Athletes: Recognizing Changes Suggestive of Cardiomyopathy*
- *Abnormal Electrocardiographic Findings in Athletes: Recognizing Changes Suggestive of Primary Electrical Disease*