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Sudden cardiac death in athletes: the Lausanne Recommendations

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Abstract

Objectives: This study reports on sudden cardiac death (SCD) in sport in the literature and aims at achieving a generally acceptable preparticipation screening protocol (PPSP) endorsed by the consensus meeting of the International Olympic Committee (IOC).

Background: The sudden death of athletes under 35 years engaged in competitive sports is a well-known occurrence; the incidence is higher in athletes (approximately 2/100,000 per year) than in non-athletes (2.5 : 1), and the cause is cardiovascular in over 90%.

Methods: A systematic review of the literature identified causes of SCD, sex, age, underlying cardiac disease and the type of sport and PPSP in use. Methods necessary to detect pre-existing cardiac abnormalities are discussed to formulate a PPSP for the Medical Commission of the IOC.

Results: SCD occurred in 1101 (1966-2004) reported cases in athletes under 35 years, 50% had congenital anatomical heart disease and cardiomyopathies and 10% had early-onset atherosclerotic heart disease. Forty percent occurred in athletes under 18 years, 33% under 16 years; the female/male ratio was 1/9. SCD was reported in almost all sports; most frequently involved were soccer (30%), basketball (25%) and running (15%). The PPSP were of varying quality and content. The IOC consensus meeting accepted the proposed Lausanne Recommendations based on this research and expert opinions (http://multimedia.olympic.org/pdf/en_report_886.pdf).

Conclusion: SCD occurs more frequently in young athletes, even those under the age of 18 years, than expected and is predominantly caused by pre-existing congenital cardiac abnormalities. Premature atherosclerotic disease forms another important cause in these young adults. A generally acceptable PPSP has been achieved by the IOC's acceptance of the Lausanne Recommendations.

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