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Screening for cardiac risk in children and young adolescent athletes - data from outpatient sports clinic

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INTRODUCTION: In an attempt to improve the identification of young athletes at potential risk of sudden cardiac death (SCD), screening protocols are established. There are two main approaches to pre-participation cardiovascular screening of the athletes: those of American Heart Association (AHA), and the other one of European Society of Cardiology (ESC) and the International Olympic Committee (IOC). The AHA recommendations consist of 12-key elements of personal and family medical history, and physical examination. The ESC/IOC recommends using a standard 12-lead ECG in addition to a focused medical history and physical examination.

In this study, implementation and results of a standardized pre-participation cardiovascular screening in young athletes, according to relevant guidelines, are described.

METHODS: In 2011, 1240 children and young adolescent athletes aged 5-17 years underwent cardiac evaluation as part of a pre-participation screening program. The majority were male and participated in football, team handball and martial arts. Level of training was different. They were investigated in outpatient sports clinic in Samobor, Zagreb County, Croatia, by physician, licensed specialist in sport medicine. Cardiac evaluation consisted of a health questionnaire (relevant personal and family medical history), physical examination, and 12-lead ECG - interpreted in accordance with the 2010 ESC recommendations.

RESULTS: Of examined athletes, 49 (4%) were referred for further cardiovascular evaluation due to symptoms (6 athletes; 12.2%), detection of a cardiac murmur or other abnormalities in physical examination (16 athletes; 32.7%), an abnormal ECG (25 athletes; 51%), and a presence of a family history of inherited cardiac disorder or premature (≤ 50 years old) SCD (2 athletes; 4.1%). The most frequent ECG changes included first degree AV block, complete RBBB and left-axis deviation. After attending specialist cardiac clinic, 27 (55%) athletes showed normal findings, 15 (31%) need further follow-up, and for 7 (14%) there were no feedback data.

CONCLUSIONS: In a study population of young athletes undergoing pre-participation screening, the prevalence of abnormal ECG findings, suggestive for underlying cardiac disease and mandating additional testing, is low (2% of the overall population). Therefore, under existing financial circumstances, a correct interpretation of an ECG should not represent additional burden in prevention and saving lives.