

An increase in sudden unexpected cardiac deaths among young Swedish orienteers during 1979–1992

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Background Sixteen cases of sudden unexpected cardiac death, 15 males and one female, are known to have occurred among young Swedish orienteers from 1979 to 1992, of which seven cases occurred between 1989 and 1992. This is considered to be indicative of an increased death rate.

Results Histopathological evaluation showed myocarditis in a higher than expected proportion of cases. In one such case, which we studied before the sudden unexpected death occurred, the victim had suffered a *Chlamydia pneumoniae* infection verified by serology, and a nucleotide sequence was found in the heart and lung by means of the polymerase

chain reaction (PCR) that hybridized with a probe specific for that organism. Male Swedish orienteers do not, however, seem to have an increased rate of exposure to this agent. No further sudden unexpected deaths among young orienteers have occurred over the past 3–5 years. At the beginning of that period, attempts were made to modify training habits and attitudes.

(Eur Heart J 1996; 17: 902–910)

Key Words: Sudden unexpected death, athlete, myocarditis, arrhythmogenic right ventricular dysplasia, *Chlamydia pneumoniae*.

Introduction

Orienteering, the task of finding the fastest track through terrain between defined checkpoints by means of map and compass reading in the shortest possible time, has for a long time been a popular sport in Sweden. At present, some 160 000 people of virtually all ages, corresponding to 2% of the entire population, pursue this sport at various levels of competition. A top segment of 3000 are ranked, 70% of whom are men, reflecting the male-to-female ratio within the sport. About 200 of the 3000 compete at the international elite level.

In the summer of 1992, we reported a case of *Chlamydia pneumoniae*-associated myocarditis and sudden unexpected cardiac death in a young Swedish orienteer^[1]. At that time we were aware of five more sudden unexpected cardiac death cases during the previous few

years among young orienteers in Sweden, all belonging to the ranked elite and in whom inflammatory lesions had been found in the heart at autopsy^[1]. In previously published studies of sudden unexpected cardiac death in young athletes, myocarditis was the cause in about 10% of the cases^[2].

In November, 1992, another young Swedish elite orienteer succumbed to sudden unexpected cardiac death, and a retrospective analysis disclosed additional cases in earlier years. This prompted the Swedish Board of Health and Social Welfare to arrange a meeting of health experts to discuss the current situation. The microbial hypothesis was actualized by the fact that Swedish orienteering had been previously struck by an epidemic of hepatitis B, comprising 564 jaundiced cases in 1958–63^[3]. The virus was presumed to be transmitted through skin lesions on the legs, resulting from scratches from twigs and brushwood, and common washing tubs which were used after races. It was concluded at the meeting that, although *Chlamydia pneumoniae* had been detected in the myocarditic heart of one case, where tissue sampling had been performed in order to allow for such testing, a broad search for all possible

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Sudden Cardiac Death In Swedish Orienteers

**Antonio Bayés de Luna,F.
Furlanello,B.J. Maron,Douglas P. Zipes**

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Sudden Cardiac Death in Swedish Orienteers Lars Wesslen, 2001 Sudden Cardiac Death in the Young and Athletes Gaetano Thiene, Domenico Corrado, Cristina Basso, 2016-03-04 This text atlas focuses on the pathology and molecular genetics of sudden cardiac death in the young and in athletes presenting the state of the art in the field as the basis for development and implementation of more effective prevention strategies including ultimately molecular therapy that will cure the underlying biological defect A wealth of high resolution color images accompanied by clear supporting text are presented to document the anatomic pathology of the cardiac diseases most frequently responsible for sudden cardiac death in this population including coronary artery diseases cardiomyopathies myocarditis valve diseases conduction system abnormalities congenital heart diseases and ion channel diseases The role of the molecular autopsy in overcoming the limitations of morphological investigations and offering new insights and avenues for prevention is explained The approach is however interdisciplinary with close attention also to epidemiologic and clinical aspects The authors draw throughout on their experience gained over 30 years in the course of a prospective study carried out in the Veneto Region North East Italy This text atlas will be of great value not only for cardiologists but also for geneticists sports physicians and residents in cardiology and pathology **Arrhythmias and Sudden Death in Athletes** Antonio Bayés de Luna, F. Furlanello, B.J. Maron, Douglas P. Zipes, 2013-06-29 Cardiovascular diseases are the most important causes of death in the world today In adults the most frequent heart disease is acute myocardial infarction which can lead to sudden death To prevent these diseases we need to fight against their main risk factors which include smoking lipid disorders hypertension diabetes and a sedentary life style among others It has been demonstrated that physical exercise or sports at any age provide notable benefits and can help to decrease other risk factors and reduce the incidence of cardiovascular diseases Exercise can be simply walking or cycling Aerobic exercise contributes to weight loss and also helps to control blood pressure cholesterol and diabetes It therefore plays an important role in prevention of heart diseases Sports for young people are of great value and advisable not only because they contribute to physical fitness but also because they help in psychological well being Young people should be encouraged to include general exercise and particularly sports into their daily activities The following points however should be kept in mind I Although winning at a sport is important this is only so if it is achieved in natural physical conditions and with the correct training Therefore it is advisable to keep well away from any type of activity which artificially increases physical performance that is drug taking Sports Cardiology David J. Engel, Dermot M. Phelan, 2021-05-06 Providing a critical update and review of salient topics needed for the proper cardiac evaluation and care of athletes this text is designed to be the most up to date and practical manual for all health care providers who evaluate and treat athletes including sports cardiologists general cardiologists sports medicine specialists team doctors and athletic trainers The book is divided into three key sections The first section discusses essential topics pertaining to the pre

participation cardiac screening of athletes providing a framework for how best to perform pre participation cardiac evaluations and optimize the interpretation of cardiac screening test results and a guide to assist the streamlining of appropriate downstream testing when required The second section reviews the management and care of athletes with specific existing cardiovascular disorders providing the reader with fundamental principles to help recognize and advise levels of sport participation to athletes with these disorders The final section deals with acute sideline management of the symptomatic athlete and will again provide practical algorithms for cardiologists and non cardiologists alike who are responsible for athlete health and safety in the sports arenas and training facilities Written and edited by highly regarded experts in the field of sports cardiology including several cardiologists who are collegiate and professional team physicians and who work with professional sports organizations on developing policies for cardiac screening and monitoring Sports Cardiology is an excellent practical resource for all clinicians working in the field

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