

SUDDEN CARDIOVASCULAR DEATH IN SPORT

LAUSANNE RECOMMENDATIONS

Under the umbrella IOC Medical Commission 10 December 2004

PREPARTICIPATION CARDIOVASCULAR SCREENING

“Sudden death” in sport has to be fully appreciated. The leading cause (more than 90%) of non-traumatic sudden death in athletes is related to pre-existing cardiac abnormality.

For the purpose of this recommendation, sudden cardiovascular death is defined as:

Death occurring within one hour of the onset of symptoms in a person without a previously recognised cardiovascular condition that would appear fatal: this excludes cerebrovascular, respiratory, traumatic and drug related causes.

The purpose of this recommendation is to identify, as accurately as possible, athletes at risk in order to advise them accordingly.

STEP 1: For all participants at the beginning of competitive activities until age 35 years.	Potentially detectable cardiovascular conditions
Personal history: Questionnaire by examining physician	Any cardiovascular condition
<ul style="list-style-type: none"> • Have you ever fainted or passed out when exercising? • Do you ever have chest tightness? • Does running ever cause chest tightness? • Have you ever had chest tightness, cough, wheezing. which made it difficult for you to perform in sports? • Have you ever been treated/ hospitalized for asthma? • Have you ever had a seizure? • Have you ever been told that you have epilepsy? • Have you ever been told to give up sports because of health problems? • Have you ever been told you have high blood pressure? • Have you ever been told you have high cholesterol? • Do you have trouble breathing or do you cough during or after activity? 	

<ul style="list-style-type: none"> • Have you ever been dizzy during or after exercise? • Have you ever had chest pain during or after exercise? • Do you have or have you ever had racing of your heart or skipped heartbeats? • Do you get tired more quickly than your friends do during exercise? • Have you ever been told you have a heart murmur? • Have you ever been told you have a heart arrhythmia? • Do you have any other history of heart problems? • Have you had a severe viral infection (for example myocarditis or mononucleosis) within the last month? • Have you ever been told you had rheumatic fever? • Are you taking any medications at the present time? • Have you routinely taken any medication in the past two years? 	
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The recommended investigations should be repeated at least every second year.

STEP 1: For all participants at the beginning of competitive activities until age 35 years.	Potentially detectable cardiovascular conditions
Family history: Questionnaire by examining physician	Any cardiovascular condition
<p>Has anyone in your family less than 50 years old:</p> <ul style="list-style-type: none"> • Died suddenly and unexpectedly? • Been treated for recurrent fainting? • Had unexplained seizure problems? • Had unexplained drowning while swimming? • Had unexplained car accident? • Had heart transplantation? • Had pacemaker or defibrillator implanted? • Been treated for irregular heartbeat? • Had heart surgery? • Has anyone in your family experienced sudden infant death (cot death)? • Has anyone in your family been told they have Marfan syndrome? 	<p>Inherited cardiomyopathy such as hypertrophic, arrhythmogenic RV, dilated</p> <p>Inherited heart rhythm problem such as cardiac ion channel diseases (long and short QT syndrome, Brugada syndrome, Lenègre disease, catecholaminergic polymorphic VT)</p> <p>Connective tissue disorders</p>
Physical examination	
<p>General:</p> <ul style="list-style-type: none"> • Radial and femoral pulses 	

<ul style="list-style-type: none"> • Marfan stigmata Cardiac auscultation: <p>Cardiac auscultation:</p> <ul style="list-style-type: none"> • Rate / rhythm • Murmur: systolic / diastolic • Systolic click <p>Blood pressure</p>	
Diagnostic tests	
<ul style="list-style-type: none"> • 12-lead rest ECG: (after the onset of puberty) 	Rhythm, conduction or repolarization abnormalities

The recommended investigations should be repeated at least every second year.

STEP 2:

Selected cases with positive personal history, family history of potentially inherited cardiac disease, or positive physical or ECG findings in Step 1 require further evaluation by an age-appropriate cardiac specialist to qualify the athlete for sport participation.

Further evaluation may include trans-thoracic echocardiography, maximal exercise testing, and 24-hour ECG monitoring. Additionally non-invasive screening of family members may provide valuable information about inherited cardiovascular disease.

Prior to the test, the athlete and, for minors, his/her legal representatives are entitled to receive the proper information on the nature and objectives of the test, and on the medical consequences in case of positive results, in particular the need for further investigation, as well as the preventive and therapeutic measures. The athlete and his/her legal representatives should also be informed on the financing of the test and the medical follow up.

Special care should be taken to protect the privacy of the athlete. The results should be transmitted solely to the athlete and his/her legal representatives.

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Lausanne, Switzerland, 9 -10 December 2004

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