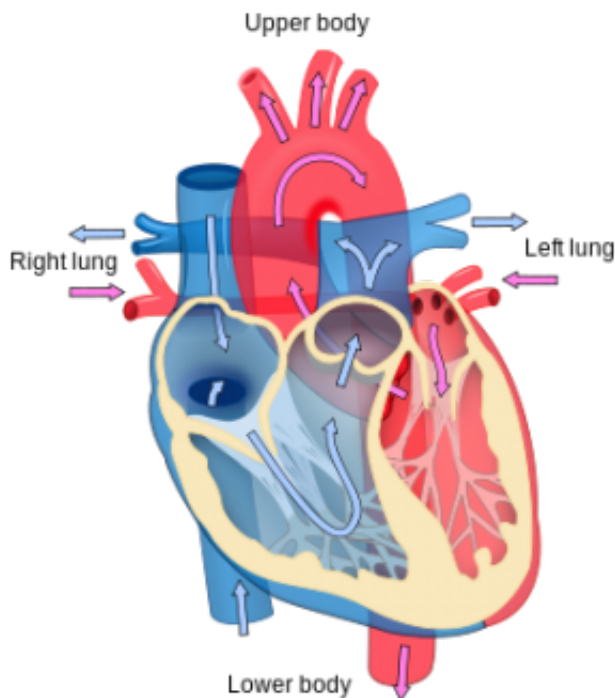


Even Olympic athletes have cardiac abnormalities and may be at risk of CVD

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Heart diagram. Credit: Wikipedia

Even athletes whose performance and fitness are at the very highest level may have life-threatening cardiovascular abnormalities. Indeed, a study of more than 2,000 athletes eligible for the summer and winter Olympic games and screened for cardiovascular health has now revealed an unexpectedly high prevalence of cardiovascular conditions, some of which were considered as very serious threats to health.¹

"Even Olympic athletes," said Dr Paulo Emilio Adami from the Institute of Sport Medicine and Science of the Italian Olympic Committee in Rome, "regardless of their superior physical performance and astonishing achievements, showed an unexpected large prevalence of [cardiovascular abnormalities](#), including life-threatening conditions."

The study, reported today at EuroPREvent 2015, assessed the [cardiovascular health](#) of 2354 elite athletes (1435 male, 919 female, mean age 27.6 years) as part of their screening to compete in Olympic games from 2004 onwards. The screening tests took place between 2002 and 2014. The athletes were engaged in 31 different summer and 15 different winter sports disciplines. Their screening included a physical examination, 12-lead and exercise ECG, and echocardiography. Further tests, which included 24-hour ECG monitoring, were given selectively to confirm earlier diagnoses.

The investigators were surprised to find that 171 of the 2354 athletes screened (7.3%) had some form of cardiovascular abnormality, either structural or electrophysiological (causing a heart rhythm problem). The abnormality in six of the 171 athletes was considered life-threatening and they were disqualified from competition. The abnormalities detected included cardiomyopathies and coronary heart disease. Hypertrophic cardiomyopathy is one of the most common causes of sudden cardiac death. A further 24 athletes were temporarily suspended but were eventually allowed to take part in the Olympic games under close medical surveillance.

Commenting on the results, Dr Adami said: "It is really surprising that Olympic athletes, who are considered some of the healthiest individuals, should have such significant abnormalities . . . and that despite these abnormalities they had managed to reach such high competitive levels. In most of the cases, their abnormalities had gone unrecognised, because the screenings they had previously had were not as extensive and

thorough as the ones we applied.

"We cannot take it for granted that elite athletes are healthy. This study demonstrates that a more accurate assessment is necessary for elite professional athletes than for members of the general population, in view of the intensity and stress on their [cardiovascular system](#) through so many hours of training and competition. We suggest that our model of screening is applied to all [elite athletes](#), regardless of the sport they practise."

Dr Adami added that all those wishing to participate in competitive sports should have a medical evaluation, to make sure "that our athletes are competing safely, free from any cardiovascular condition".

Screening for leisure athletes, he proposed, would depend on the characteristics of the sport and the volume of exercise. "As a general rule," said Dr Adami, "I would advise a visit to a sports medicine doctor or the GP beforehand, especially to those who are very unfit or sedentary."²

However, preparticipation of athletes and sports players is controversial, mainly because studies have not yet confirmed beyond doubt that a mass population screening programme would actually detect all the higher risk cases. One study found that around 800 athletes would need to be denied sports activity to prevent one sudden death. Most evidence in favour of screening comes - like this study - from Italy, where a programme to screen all teens and adults in organised sports was introduced in 1982.

In the Veneto region of Italy, for example, the annual incidence of sudden cardiac death in [athletes](#) decreased by 89% (from 3.6/100,000 person-years in 1979-1980 to 0.4/100,000 person-years in 2003-2004 - whereas the incidence of sudden death among the unscreened non-athletic population did not change significantly.³ Today, Italians are not

eligible for competitive sports until their cardiovascular health has been confirmed.

More information: 1. Adami PE, Squeo MR, Quattrini FM, et al. Efficacy of a tailored screening protocol: a six Olympic games screening experience. Presented at EuroPREvent 2015, Lisbon.

2. Borjesson M, Urhausen A, Kouidi E, et al. Cardiovascular evaluation of middle aged/senior individuals engaged in leisure time sport activities. *Eur J Cardiovasc Prev Rehabil* 2011; 18: 446-458.

3. Corrado D, Basso C, Pavei A, et al. Trends in sudden cardiovascular death in young competitive athletes after implementation of a preparticipation screening program. *JAMA* 2006; 296: 1593-1601.

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