Cardiomyopathy and Myocarditis in Competitive Athletes: Recommendations from the AHA/ACC

Key Points for Practice

- Asymptomatic persons who are positive for the HCM genotype can reasonably partake in competitive sports in the absence of left ventricular hypertrophy.
- Patients with myocarditis can resume training and competition if ventricular systolic function and serum markers of myocardial injury, inflammation, and heart failure are normal and if no arrhythmias are seen on monitoring.
- Persons in the acute phase of pericarditis should not play competitive sports and should return to play only if there is no evidence of active disease.

From the AFP *Editors*

▶ **See related Practice Guideline at http://www.aafp.org/afp/2016/0715/p170.html.**

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A collection of Practice Guidelines published in *AFP* is available at http://www.aafp.org/afp/practguide.

CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz Questions on page 208.

The American Heart Association (AHA) and American College of Cardiology (ACC) have provided recommendations regarding eligibility and disqualification of competitive athletes with cardiovascular abnormalities. The full guidelines can be found at http://circ.ahajournals.org/content/132/22/e256.full. This summary focuses on cardiomyopathy and myocarditis.

Recommendations

HYPERTROPHIC CARDIOMYOPATHY

Hypertrophic cardiomyopathy (HCM), which occurs in one in 500 persons, is a common nontraumatic cause of sudden death in young persons. For persons who are positive for the HCM genotype, competing in competitive athletics is reasonable if no symptoms or evidence of left ventricular hypertrophy on echocardiography or cardiac magnetic resonance imaging are present, and especially if there is also no family history of related sudden death. Persons who likely have HCM with clinical manifestations such as ventricular hypertrophy should not participate in most competitive sports, except low-intensity class 1A versions as described in the classification of sports in the full guidelines. Providing medication such as beta blockers to persons with cardiac-related symptoms or ventricular tachyarrhythmia and placing a prophylactic implantable cardioverter-defibrillator (ICD) in persons with HCM are not recommended if the only reason for doing so is to allow participation in high-intensity sports. These medications may actually inhibit a person's best physical performance, and the ICDs can have associated complications.

MYOCARDITIS

Before a return to competitive sports is allowed, resting echocardiography, Holter monitoring for 24 hours, and exercise electrocardiography should be performed in persons with suspected acute myocarditis no earlier than three to six months after initial presentation. These persons can then participate in training and competition, assuming their ventricular systolic function and serum markers of myocardial injury, inflammation, and heart failure are normal, as well as that no relevant arrhythmias are seen on the Holter monitor or exercise electrocardiography. It has not been determined if resuming participation is contingent on whether myocarditis-related late gadolinium enhancement on cardiovascular magnetic resonance imaging has resolved. If a person has or is suspected to have myocarditis, he or she should not compete if there is inflammation.

ARRHYTHMOGENIC RIGHT VENTRICULAR CARDIOMYOPATHY

Persons with arrhythmogenic right ventricular cardiomyopathy, or those with a borderline or possible diagnosis, should not compete in most competitive sports, except possibly the low-intensity class 1A versions as described in the full guidelines. Placing a prophylactic ICD is not recommended if the

only reason for doing so is to allow participation in high-intensity sports.

PERICARDITIS

Persons in the acute phase of pericarditis should not play competitive sports and should return to play only if there is no evidence of active disease (e.g., effusion on echocardiography) and inflammation serum markers are normal. If there is possible myocardial involvement, participation decisions should be based on disease course, and those with chronic pericarditis and constriction should be disqualified entirely.

OTHER MYOCARDIAL DISEASES

Until more study results are available, athletes with symptomatic dilated cardiomyopathy, primary nonhypertrophied restrictive cardiomyopathy, and systemic infiltrative cardiac myopathies with secondary cardiac involvement (e.g., sarcoidosis) should not participate in most competitive sports, with the possible exception of low-intensity class 1A versions in select cases.

Guideline source: American Heart Association and American College of Cardiology

Evidence rating system used? Yes

Literature search described? No

Guideline developed by participants without relevant financial ties to industry? Yes

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