

Should athletes with cardiovascular diseases play sports?

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Credit: Yale University

In 2012, Olympic gold medalist swimmer Dana Vollmer set a world record even as a genetic condition threatened to stop her heart at any moment. She has long-QT syndrome, one of several inherited heart diseases that can send patients into cardiac arrest.

Genetic heart diseases, whether primary electrical abnormalities like

long-QT syndrome, or cardiomyopathies (heart muscle diseases), such as hypertrophic cardiomyopathy (HCM), can lead to dangerous irregular heart rhythms, or arrhythmias. In ventricular fibrillation, the heart's electrical system goes haywire, causing the heart to quiver instead of squeezing blood to the rest of the body. This is a form of [cardiac arrest](#), which is fatal if not treated immediately.

Because of this, many patients with these conditions have [implantable cardioverter defibrillators](#) (ICDs) that send shocks into their heart to return the rhythm back to normal when things have gone awry. And, because exercise has been believed to increase the risk for cardiac arrest for patients with many heart conditions, sports were discouraged. (Cardiologists advised against sports participation, following guidelines put out by the American College of Cardiology and American Heart Association in 2005 advising athletes with conditions like Vollmer's to abstain from all sports more vigorous than golf, regardless of whether or not they have an ICD.)

That is, until three years ago. In 2015, those guidelines were changed. Athletes with ICDs who have a desire to do so may now be able to consider participating in competitive sports, largely because of the work of Rachel Lampert, MD, a Yale Medicine cardiologist. She authored a study (published in the journal *Circulation* in 2013) examining 372 athletes (with a median age of 33 years old) who had opted to continue playing sports with their defibrillators despite the guidelines. Each of them had a serious heart condition such as long-QT syndrome or HCM, or other cardiac diagnoses. The researchers checked in with participants every six months to see if their defibrillators delivered shocks during [physical activity](#) and whether or not the shocks were effective in stopping a dangerous arrhythmia. They found that 10% of participants experienced shocks during competition/practice, 8% experienced shocks during normal physical activity, and 6% experienced shocks at rest. Ultimately, those shocks were able to stop all cardiac arrhythmia

episodes related to exercise.

In 2017, Dr. Lampert and her colleagues published a follow-up report with 68 additional athletes (and two further years of follow up), once again finding no cardiac-related deaths or fainting events during physical activity.

Dr. Lampert says that her study was motivated, in part, by an athletic patient she treated early in her career. He had cardiomyopathy and had just experienced a fainting episode (syncope). He needed a defibrillator, but when Dr. Lampert told him he'd no longer be able to compete in two sports he loved, cycling and skating, he asked to see the data to back up her recommendation. "I said, 'There are no data. That's just what the experts say,'" she recalls. "And he said, 'I don't care about what the experts say. Show me the data, and I'll stop.'"

That conversation stuck with the cardiologist, inspiring her to conduct a survey of her colleagues, who were members of the Heart Rhythm Society, to see how many were allowing their patients to go back to sports after getting a defibrillator implanted. Surprisingly, none of her colleagues reported any serious adverse events, which led Dr. Lampert to probe more deeply into the issue by conducting a large prospective study. She was curious what the data would actually say—whether it turned out that sports were dangerous, or, in fact, less dangerous than had been thought—the results would help her patients make better decisions. "The goal was to get data where none were available," says Dr. Lampert.

While previous guidelines urged athletes with defibrillators to stop playing sports full-stop, Dr. Lampert hopes that her study and the new guidelines will encourage patients to have deeper conversations with their doctors about what would make the most sense for their situation. If your defibrillator doctor doesn't want to have that conversation with

you, Dr. Lampert recommends finding one who will. "While patient-doctor conversations are, of course, important for every medical decision, these conversations can be difficult," says Dr. Lampert. "For physicians, it requires talking about what we know and what we don't know, how it applies to the person in front of you, and how much risk the patient and family want to live with. These conversations need to be tailored to each patient, as the specific diagnosis and specific sport can influence the degree of risk."

What should you talk to your doctor about before you think about playing again? Dr. Lampert offers these points:

- How important is the sport to you? For many people, sports can confer a number of psychological and physical health benefits. Weighing those in the context of risk for a severe cardiac event can help you arrive at a decision.
- What data are available for physical activity and the [heart disease](#) in question? Ask your doctor about the data available for the condition you have, the strengths and limitations of the data, and how similar you are to the patients enrolled in the study where the data comes from.
- How do you think about risk? You and your family should think about how much risk you are willing to live with. Dr. Lampert says that some patients and families are very comfortable with high levels, while others are much more risk averse. This can all play a role in deciding whether or not to go back to playing sports.

In the meantime, Dr. Lampert's data search continues. She's now looking at the risk of vigorous exercise for people with inherited heart diseases who, at baseline, have a lower risk for cardiac arrest and, as a result, do not receive implanted defibrillators. A retrospective study published in 2013 that reviewed records for 353 athletes with long-QT syndrome

suggests that the risk, in appropriately evaluated and treated patients, may not be as high as experts previously thought. Of the athletes they looked at, researchers found a low level of cardiac events and no deaths after an average of 3 to 5 years. While that study looked at patient records after the fact, an ongoing pair of prospective studies by Dr. Lampert and two outside investigators, funded by the NIH, called Lifestyle and Exercise in Long QT and in HCM, (LIVE-LQTS and LIVE-HCM), will provide more definitive data on the risks and benefits of vigorous exercise for individuals with these diseases, with or without an ICD.

"Sports can be a big part of an athlete's identity. Weighing the benefits against the known or potential risks is important, particularly when the risk is not yet defined," says Dr. Lampert.

Provided by Yale University

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