## How does the coronavirus affect the heart?

By The Associated Press

ow does COVID-19 affect the heart? Even though it's known as a respiratory virus, doctors believe the coronavirus can directly infect the heart muscle and cause other problems leading to heart damage.

In some people, as COVID-19 decreases lung function, it may deprive the heart of adequate oxygen. Sometimes it causes an overwhelming inflammatory reaction that taxes the heart as the body tries to fight off the infection.

The virus can also invade blood vessels or cause inflammation

within them, leading to blood clots that can cause heart attacks

Clots throughout the body have been found in many COVID-19 patients. That has led some doctors to try blood thinners, although there is no consensus on that treatment.

Dr. Sean Pinney of the University of Chicago says people with heart disease are most at risk for virus-related damage to the heart. But heart complications also have been found in COVID-19 patients with no known previous disease.

A recent review in the Journal of the American College of



Cardiology notes that evidence of heart involvement has been found in at least 25% of hospitalized coronavirus patients. At some centers, the rate is 30% or higher. And some studies have found elevated enzyme levels and other signs suggesting heart damage even in patients with milder disease. It is not known whether that damage is permanent. One small study found evidence of the virus in the hearts of COVID-19 patients who died from pneumonia. Another, using heart imaging, found inflammation of the heart muscle in four college athletes who had recovered from mild COVID-19 infections. There were no images available from before the athletes got sick, and therefore no way to know if they had pre-existing heart problems.

Dr. Tom Maddox, an American College of Cardiology board member, says it's unclear if the virus can cause a normal heart to become dysfunctional: "There's still so much we don't know."

## Tokyo Olympics: Many rules, no partying, no hanging around

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the Olympics and Paralympics.

Coates was asked if athletes would be discouraged from sightseeing, or looking around the city.

"Yes," he replied simply, a short answer suggesting these Olympics will be all business with few frills.

Coates accompanied IOC president Thomas Bach to Tokyo in November as he met Prime Minister Yoshihide Suga and shored up support with key Japanese sponsors.

It was Bach's first visit to Japan since the Olympics were postponed in March.

Bach left Tokyo after two days of saying a vaccine was likely to be available and athletes would be strongly encouraged to take it.

Organizers and the IOC are growing confident they will have a vaccine and rapid testing. This will help, but dozens of other countermeasures will also be in place; social distancing, masks, and bubbles in the venues and the Athletes Village.

Christophe Dubi, the Olympic Games executive director, acknowledged much is still in the planning stages with many scenarios in play ahead of the scheduled opening on July 23, 2021.

"We don't know what the situation will be next year, but some decisions will have to be made already in December," Dubi said, speaking remotely.

Coates said the opening ceremony would be restricted to only athletes and a maximum of six team officials. In the past, dozens of officials — at times 50, Coates said — were allowed to march, filling in for athletes who may have skipped in order to compete the next day.

"We won't do that this time," Coates said. "That is just increasing the potential

problem in the ceremony."

Coates said all 206 countries would be represented in the opening ceremony, and a full contingent of 11,000 athletes will compete in the games. But the opening ceremony parade is likely to look smaller.

Officials are also wrestling with how to keep the opening ceremony from becoming a mass-spreading event, even if athletes are tested when they enter Japan and when they leave their home country.

"We don't want to change the tradition of all athletes having the opportunity to parade in the opening ceremony," Coates said, suggesting athletes might be tested as they entered the stadium, or in the tunnel as they come on to the track.

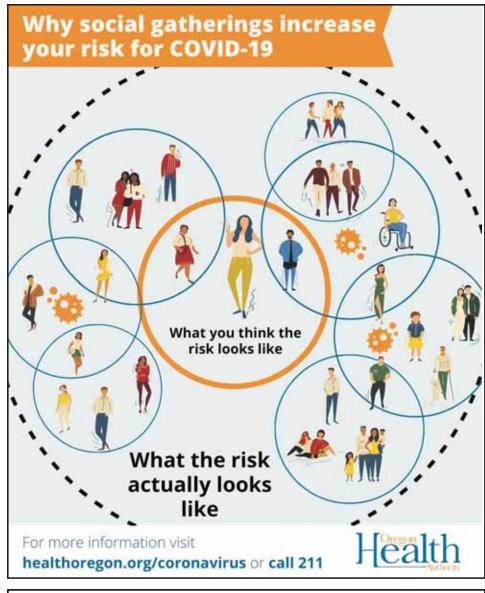
There are sure to be lots of rules. And athletes will be asked to follow them, as will thousands of officials, judges, media, VIPs, and broadcasters who will need to enter Japan

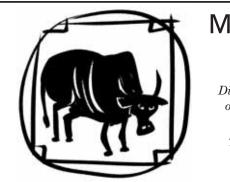
"I am absolutely sure that people will play by the rules and respect whatever guidelines are put in place," said International Paralympic Committee president Andrew Parsons, who spoke remotely from Brazil. "Every stakeholder involved in the Olympics and Paralympics understands the importance."

Bach and Coates have both said they want to have fans from abroad, which has yet to be confirmed. Bach said he expected a "reasonable number" of fans in the venues. But how many, and from where, is unclear.

"We hope we can give the opportunity to as many people as possible, including foreign spectators," Coates said. "We want the families of the athletes who come from overseas to have an opportunity to see their children. That's what the Olympics is about, and I hope it's possible."







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