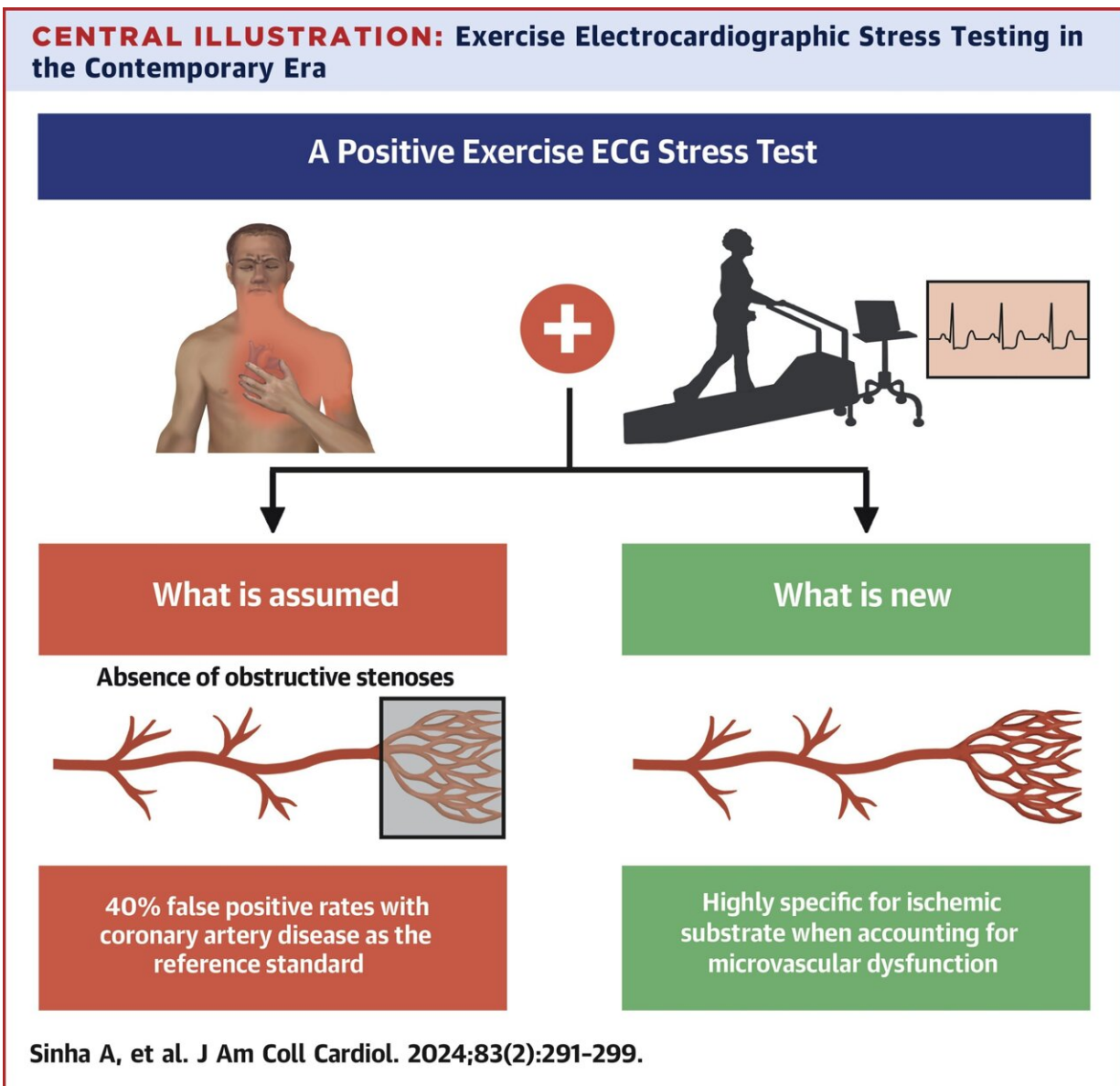


Revival of heart stress test could change how patients are diagnosed

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Credit: *Journal of the American College of Cardiology* (2024). DOI: 10.1016/j.jacc.2023.10.034

A heart test that has been downgraded in the international guidelines for its perceived inaccuracy has been given a jolt of life after a new study confirms its veracity when put to the test against contemporary standards.

The electrocardiogram exercise stress test (EST) was formerly a popular way of assessing patients with angina. However, the [diagnostic test](#) has fallen out of favor due to its perceived inaccuracies. A new study by Professor Divaka Perera and colleagues, however, questions this dogma after finding that an abnormal EST was excellent at picking up abnormalities in the vessels supplying the heart muscle with blood.

Angina is a term used for a type of chest pain that occurs due to an imbalance between the supply and demand of blood to the heart muscle. One way of assessing patients with angina is to look for whether the [blood supply](#) to the heart muscle matches the demand during physical stress using exercise electrocardiogram stress testing (EST). During the test, a patient typically exercises on a treadmill or stationary bike while a cardiologist studies the electrocardiogram (ECG) for changes which might suggest an abnormality in the blood vessels supplying the heart muscle.

The test has fallen out of favor in recent guidelines as results from the EST frequently identify a patient with a blood supply/demand mismatch during exertion, but subsequent tests don't reveal any narrowing in the large blood vessels. Angina was previously thought to occur solely due to narrowing in the large blood vessels supplying the heart muscle. However, clinicians now know that blood supply/demand mismatch can

occur in patients with normal large blood vessels but dysfunctional [small blood vessels](#), known as coronary microvascular disease.

In the study, which has been [published](#) in the *Journal of the American College of Cardiology*, researchers set out to test the accuracy of ESTs in picking up any abnormality in the heart's blood supply, be it with the large or small blood vessels.

A group of 102 patients with angina without narrowing in the large blood vessels underwent a comprehensive assessment of the function of both the large and small blood vessels before going on to carry out an EST. The authors found that about 30% of patients had evidence of blood supply/demand mismatch on the EST, all of whom would have been classified as having an inaccurate test in the past as all of these patients had normal large blood vessels. However, every single patient who had evidence of blood supply/demand mismatch on their EST had abnormalities in their small blood vessels.

The results suggest that an abnormal EST is, in fact, very accurate in identifying [patients](#) who have abnormalities in their large and/or small [blood vessels](#) supplying the [heart muscle](#).

Dr. Aish Sinha, first author of the study, said, "These findings have significant implications for the way in which we view the diagnostic accuracy of all non-invasive tests. Should all non-invasive modalities now be validated against the contemporary reference standard of comprehensive coronary physiology assessment?"

"This study has far-reaching implications as it may make a currently difficult to diagnose condition far easier to identify and, subsequently, treat. These hypotheses warrant further randomized trials to answer them."

More information: Aish Sinha et al, Rethinking False Positive Exercise Electrocardiographic Stress Tests by Assessing Coronary Microvascular Function, *Journal of the American College of Cardiology* (2024). [DOI: 10.1016/j.jacc.2023.10.034](https://doi.org/10.1016/j.jacc.2023.10.034)

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