Transcript Details
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Athlete-Focused CPET: Interpreting Physiology Beyond Standardized Testing

Announcer:
Welcome to *Heart Matters* on ReachMD. On this episode, we'll hear from Dr. Benjamin Levine, who's a Professor in the Department of Internal Medicine at UT Southwestern Medical Center as well as a member of the Division of Cardiology and the Director of the Institute for Exercise and Environmental Medicine at Texas Health Presbyterian Hospital Dallas. He'll be sharing best practices in cardiopulmonary exercise testing for athletes, which he discussed at the 2026 American College of Cardiology Annual Scientific Session and Expo. Here's Dr. Levine now.

Dr. Levine:
Cardiopulmonary exercise testing is an added dimension to the exercise test in general. That could be whether it's an athlete or a non-athlete. I think the single most important thing is to make sure that you know your athlete and the demands of their sport. If there's one message that I want to leave this audience with, it's that you cannot do a Bruce Protocol exercise test on a competitive athlete and think that you're going to find anything useful. You need to understand the athlete, what their competitive level is, and what you expect from their training and competitive state. You can't just use generic normalized values for healthy people.

Now, when you get a CPET, perhaps the single most important and universal measure that you're going to obtain from that test is the maximal oxygen uptake, or VO_2max. That's the single best measure of fitness, and this is where knowing what your athlete's level and training are will let you know whether the values you're obtaining for that are what you expect. Within that maximal oxygen uptake, there are, of course, measures of submaximal performance, and I urge all your listeners to not just do a single incremental exercise test, but to include steady-state measurements at different levels of intensity. Frankly, no athlete performs with just an incremental amount of exercise. The incremental test is useful to identify VO_2max, but there are a number of other variables that I think are important.

For example, we think it's important to measure the ventilatory or lactate thresholds, and that's something that virtually every metabolic cart will help you generate, but you can't just use the one that automatically pops out of the machine. You've got to look carefully at the different components of the ventilatory threshold, and that includes the relationship between oxygen uptake and ventilation. It includes a number of other relationships, particularly between VO_2 and VE and VE over VCO_2. Both of those are very important components of a cardiopulmonary exercise test.

Of course, heart rate is easy to measure and a key component of a cardiopulmonary exercise test. Don't forget it. Just because you've got the gas exchange doesn't mean the heart rate is not relevant. And identifying the heart rate at particular thresholds also becomes extremely useful for athletes and their coaches to follow as they take this information and bring it out to the field.

If you're looking for an arrhythmia or an athlete who's had palpitations or syncope, frankly, the CPET is less important than what happens on the electrocardiogram. And I will also say that if you really want to be able to do testing on athletes, you've got to be creative. So I test rowers on a rowing machine. I test cyclists on a bike and runners on a big treadmill. We will test CrossFit athletes by doing box jumps or pushups or pullups. So you really need to be creative and flexible enough to do a test that reflects the athlete's sporting demands.

Announcer:
That was Dr. Benjamin Levine sharing expert insights on cardiopulmonary exercising testing athletes. To access this and other episodes in our series, visit *Heart Matters* on ReachMD.com, where you can Be Part of the Knowledge. Thanks for listening!