

# High blood pressure surprisingly common in female college athletes

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While many college athletes may seem like they are in peak physical condition, they can still face significant cardiovascular risks. Nearly half

of a cohort of female athletes at two U.S. universities were found to have higher than normal blood pressure levels, according to research presented at the American College of Cardiology's Annual Scientific Session Together with World Congress of Cardiology (ACC.20/WCC).

"There have been very few studies describing the female [athlete's](#) heart and [risk factors](#) that might lead to cardiac morbidity and mortality in this group," said Cecil Rambarat, MD, cardiology fellow at the University of Florida and the study's lead author. "This work gives us a baseline through which we can study the female collegiate athlete's heart in comparison to the male athlete's heart."

The study drew data from 329 female athletes participating in collegiate sports at the University of Florida or University of Georgia. Each participant's [blood pressure](#) was measured as part of a pre-participation medical examination. Researchers classified participants' blood pressure according to the 2017 ACC/AHA High Blood Pressure in Adults guideline, defining normal blood pressure as less than 120 mm Hg systolic and less than 80 mm Hg diastolic; elevated blood pressure as 120-129 mm Hg systolic and less than 80 mm Hg diastolic; hypertension stage 1 as 130-139 mm Hg systolic or 80-89 mm Hg diastolic; and hypertension stage 2 as 140 or more mm Hg systolic or 90 or more mm Hg diastolic.

Analysis revealed that 47% of the athletes had blood pressure exceeding [normal levels](#), a proportion far higher than the 5-10% that would be expected in a general population of college-age women, Rambarat said. Of these women with abnormal blood pressure values, 61% had values classified as elevated blood pressure, 38% had values in the stage 1 hypertension category and 1% had values in the stage 2 hypertension category.

"That's really a remarkable proportion given that these are young,

supposedly healthy women," Rambarat said. "It's something that requires further study. If these female athletes are developing high blood pressure at a younger age—maybe associated with their training, maybe associated with other lifestyle measures—we may need to start thinking about better ways of modifying any identifiable risk factors, or potentially [consider] starting [some] patients on medication for high blood pressure at a younger age."

The researchers also found significant differences in blood pressure levels among athletes involved in different sports and between sports with varying degrees of dynamic components (time spent actively moving) and static components (bursts of intense exertion against a static object or force). For example, women who played softball—a sport with a low static component and moderate dynamic component—were found to have a high prevalence of elevated blood pressure, while those involved in gymnastics—which has a high static component and low dynamic component—had normal blood pressure.

Researchers said the study is especially important because female athletes have not traditionally been studied as closely as their male counterparts. Decades of research on male athletes has revealed that many have a larger than normal heart and lower than normal resting heart rate, among other differences, in a pattern commonly referred to as "athlete's heart." Rambarat said the new study suggests female athletes may also have unique cardiovascular characteristics that warrant further study. For example, future studies could incorporate images of the heart, such as echocardiograms, with other measures to understand whether female athletes show an overall pattern of changes similar to what has been found in males.

The study was limited by its relatively small sample size and the fact that blood pressure measurements were taken only at a single point in time. According to the 2017 ACC/AHA guideline, blood pressure

measurements should be taken on at least two occasions to confirm a diagnosis of high blood pressure. Over time, [high blood pressure](#) causes damage to arteries and restricts [blood](#) flow, which can weaken the heart muscle or lead to events such as a [heart](#) attack or stroke.

Provided by American College of Cardiology

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