Weight loss not always best strategy to enhance athletic fitness in young women

July 27 2020

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For young women seeking to improve their aerobic fitness and athletic performance, who are not overweight or obese, weight loss may be counterproductive, according to preliminary research to be presented

July 27-30, 2020, at the American Heart Association's virtual Basic Cardiovascular Sciences 2020 Scientific Sessions. The meeting is a premier global exchange of the latest advances in basic cardiovascular science including research in fields like microRNAs, cardiac gene and cell therapy, and cardiac development.

"There is a common preoccupation among athletes in endurance sports that weight loss might improve their competitive performance; however, data on the topic has been mixed, based on small numbers and focused on men," said J. Sawalla Guseh, M.D., co-senior study author, an instructor in medicine at Harvard Medical School and a cardiovascular physician scientist at Massachusetts General Hospital in Boston.

Researchers evaluated the aerobic fitness of 805 women and 1,419 men, ages 17 through 94, who were patients at the Cardiovascular Performance Program at Massachusetts General Hospital between 2011 and 2019. Participants, tested because of suspected heart problems, ranged from professional athletes to non-athletes.

In the study, aerobic fitness was measured using peak VO2, the amount of oxygen a person consumes when they are exercising as hard as they can. The more oxygen a person can consume, the more aerobically fit they are. Highly fit women were those with at least a 20% greater VO2 than would have been predicted by their height, weight and gender.

Plotting the relationship between aerobic fitness and body mass index (BMI, a ratio of body weight in relation to height), researchers found:

- among men of all ages and women 30 and older, aerobic fitness declined steadily with increases in BMI;
- the relationship was more complex in women under 30, with the lowest aerobic fitness among those with the highest BMI and somewhat poorer aerobic fitness in women with low BMI; and

- women under 30 who had the best aerobic fitness—aerobic capacity 20% better than expected of typical aerobic athletes—had an average BMI of 23.2 (such as a woman five feet five inches tall, weighing 140 pounds), which is at the upper range of the World Health Organization's recommended optimal BMI for good health.

"This serves as a reminder that low BMI is not a prerequisite for higher aerobic fitness," Guseh said. "In women who are not overweight or obese, a lower BMI may be aerobically counterproductive. Given the risks that can come with weight loss in athletes, and given that there are many other variables an athlete can adjust to maximize performance—such as training intensity, training frequency, skill acquisition, competition strategy, sleep and nutrition—we advocate that BMI and weight as targets should be de-emphasized for young adult women."

Researchers stress that there can be both short- and long-term negative consequences when an athlete consumes too few calories to support their activity level.

"The negative health risks include low bone mineral density, bone fractures, menstrual irregularities, higher circulating cholesterol levels, anemia, blood pressure and heart rate irregularities, depression and the development of eating disorders," Guseh said. "It's critical that if coaches or trainers want a young, normal-weight, female athlete to further lower her BMI, she should be empowered to ask why. Members of the athletic care team should be receptive to having this conversation in the context of the athlete's overall health and the potential adverse health impact."

The cross-sectional design of the study did not allow the researchers to prove a cause-and-effect relationship between BMI and aerobic fitness.

Provided by American Heart Association