Medical Xpress

Scientists far from finish line in understanding anemia in female athletes

November 20 2013

When Kaitlyn Patterson's fatigue progressed to hyperventilating even during slow runs, and then forced her to quit high school distance running for the season, she knew something was very wrong.

Patterson had exercise-induced iron-deficiency anemia, a common, perplexing problem among elite female athletes, especially endurance runners. Later, as a University of Michigan sophomore, she was so

interested in the topic that she applied for an undergraduate research position in the lab of Peter Bodary, U-M clinical assistant professor of movement science and health & fitness.

Patterson recently co-wrote a study challenging—and perhaps putting to rest—a popular hypothesis on what causes exercise-induced iron-deficiency anemia.

It's another in a succession of findings from separate research groups that debunk the notion that the iron-regulating hormone hepcidin causes exercise-induced anemia. Conventional science has suggested that rigorous exercise causes hepcidin spikes that result in anemia.

"The U-M finding is significant because we want to provide physicians with the most accurate information regarding exercise-induced anemia," Bodary said.

The downside is that hepcidin isn't the anemia cure-all the scientific community had hoped.

Bodary said that physicians already do a nice job of helping athletes recover from exercise-induced anemia by providing iron supplementation and educating athletes about optimizing iron absorption. The challenge now is understanding what causes anemia in order to prevent it.

The U-M study is the first known to compare hepcidin levels in competitive college female runners against those of non-exercisers, Bodary said. About half the runners in the study had a history of anemia and about 85 percent supplemented with iron.

Researchers wanted to see if hepcidin remained high in resting athletes, which could link elevated hepcidin with exercise-induced iron-

deficiency anemia. However, overall hepcidin levels in both groups were about equal, Bodary said.

Will scientists have to return to the starting line? Not necessarily. A physician familiar with Bodary's research contacted him about a female patient with long-term anemia that is hypothesized to have elevated levels of resting hepcidin. Although she didn't exercise regularly, her blood work resembled that of an athlete with the disease, Bodary said.

By analyzing the woman's blood samples, Bodary's lab hopes to learn if high hepcidin drives her anemia. Results could help scientists decode what causes anemia in both the general population of women and in elite athletes.

Meanwhile, Patterson remains healthy since her first struggles with anemia.

"I still run, and have returned to cross country skiing and have taken up cycling," she said. "I'm planning on ski racing this winter and putting together a solid triathlon season. I've been fortunate in that I responded well to iron supplementation, so I've stayed healthy since my original bout with anemia."

More information: The study appears in the *International Journal of Sport Nutrition and Exercise Metabolism:* journals.humankinetics.com/Acu … ents/DocumentItem/10%20Ma%20IJSNEM_2012_0192_513-521-ej.pdf

Provided by University of Michigan