



Delayed Onset Muscle Soreness Plagues Triathletes, Runners

By Jordan D. Metzler, MD

I was in my office last month when Christy, a marathon runner and triathlete, came in to see me. “Doc,” she said, “I ran the marathon of my life a few days ago, but today, I’m really having trouble moving.”

“How bad is it?” I asked, knowing that Christy was an experienced athlete.

“I have had plenty of aches after races,” she said. “But this is way out there—the worst I have ever had.”

When I asked a bit more about her race, I discovered that several factors were at play. The day was quite humid and Christy said she didn’t do a very good job with pre-race or during-race hydration, and, the week before the marathon, she had viral gastroenteritis (stomach flu).

Christy was suffering from delayed onset muscle soreness (DOMS), a potentially serious injury to muscle that results from excessive loading force on muscle cells. It is important to distinguish the symptoms of DOMS from the everyday aches and pains that come the day after a hard race, training day or athletic event. DOMS generally shows up 24 to 48 hours after the muscle injury and is more severe than the mild, everyday soreness that all triathletes are familiar with.

When muscle tissue is injured, it releases a protein called myoglobin. We all have a bit of myoglobin release after hard athletic events. Several studies have looked at healthy athletes after marathons and found mild

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to moderate amounts of myoglobin in the urine, a condition called myoglobinuria. When the muscle injury is more serious, however, the amounts of myoglobin can be quite high. The urine can be dark colored, and in some cases, kidney damage and even kidney failure can result.

In Christy’s case, I set up a urinalysis right away, especially because she mentioned that she had noticed her urine was a bit darker than normal. Sure enough, she had high levels of myoglobin in her urine.

Thankfully, due partly to staying well-hydrated over the ensuing days, a series of blood tests to determine her kidney function revealed that Christy’s kidneys were only slightly injured. Her status returned to normal after a couple of weeks.

DOMS is actually much more common than most athletes realize. Why some athletes experience DOMS and others don’t is not yet understood, but one of the most important factors is dehydration before, during and after a hard event. As was the case with Christy, an illness that results in vomiting or diarrhea can increase the risk of DOMS due to baseline dehydration before the event. Finally, some athletes just seem prone to developing DOMS and seem to get it after every major event, probably because of biological and genetic factors affecting their muscle tissue.

Keys to DOMS prevention include smart hydration, immediate recognition of “worse than normal” muscle pain and avoidance of significantly harder than normal exercise bouts (whether workouts or races). If you suspect DOMS make sure to discuss it immediately with your sports doc as soon as possible.

The good news: DOMS is usually preventable with smart pre-race behavior and athlete education. ▲

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