

# Delayed onset muscle soreness a real pain after exercise

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For the fitness-inclined, a hard workout can actually feel good: a chance to loosen up tight joints, sweat out the day's stress and push through the burn of those last few reps.

But anyone who has pushed themselves with heavier weights or more miles has surely experienced the consequences the next day, when tight and sore muscles will barely let you walk up steps or lift your arms.

It's called Delayed Onset Muscle Soreness, or DOMS, and it's perfectly normal, says Dan Carl, PhD, an assistant professor of clinical rehabilitative sciences at UC's College of Allied Health Sciences.

In typical DOMS, severe soreness and a decreased range of motion will develop between 24 and 48 hours after exercise, peak within 72 hours and then subside shortly after. It's the body's normal process after an intense workout and, Carl says, there isn't much you can do to avoid it.

"When you're truly working the muscle, DOMS is inevitable," he says. "You're creating microtrauma at the individual fiber level, so you're actually creating tears and disruption in the protein itself."

When muscle fibers tear, Carl said calcium will leak out, leading to further breakdown of the protein and stimulation of the body's inflammatory-repair response, which floods the area with cells known as macrophages and neutrophils to begin the repair process. While the response creates soreness and stiffness in the muscle, it quickly mends

the torn fibers, even making them stronger and thicker than before.

What isn't in the muscle during this process? Lactic acid. Carl said the past theory that a buildup of lactic acid caused muscle soreness has been discredited.

"It was the theory among scientists in the '60s and '70s," he says, "but we have since figured out lactate has nothing to do with it. [Lactic acid](#) clears out fairly quickly from the muscles, within 15 to 20 minutes, if you do any sort of cooldown or activity after the true intensity of the workout."

Carl says DOMS is particularly prevalent among "weekend warriors" or light exercisers trying to increase their stamina: "If you're training every day, then part of your body's training adaptation is your ability to recover and offset that damage. Those people will have minor swelling within the tissue, but not the kind of swelling you get with DOMS."

If you do find yourself aching after a tough workout, try to keep moving.

"Light walking or activity would help out tremendously," says Carl. "It can produce an increase in fluid movement throughout the muscle tissue. Ice is your friend, too, as it reduces swelling. Regardless, DOMS takes 24 to 48 hours to repair itself, at minimum."

While DOMS is a normal response to intense exercise, Carl says it doesn't include sharp, piercing pain or throbbing in the affected muscle. If you're affected by any of those symptoms after a [workout](#), contact your doctor.

Provided by University of Cincinnati

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