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Delayed Onset Muscle Soreness

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Have you ever woken up the morning after a hard workout with sore, stiff painful muscles, and wondered if you had over-done it the day before? Or perhaps you have experienced painful and tender muscles after a hard day of yard work or shoveling snow. If so, you are definitely not alone.

The most probable cause for such symptoms is called delayed onset muscle soreness (DOMS), and it is extremely common in seasoned and novice athletes alike. It is a sign that your workout has been effective, probably with heavier weights, or more repetition than you have previously tackled with that particular group of muscles. Other symptoms include a loss of flexibility and range of motion, muscle twitches or spasms, and even possibly temporarily reduced strength. Symptoms tend to appear in the first 24-48 hours after a workout, and can take up to 72 hours after they appear to dissipate.

The cause of DOMS has been speculated for ages. Many have heard that DOMS is caused by a build up of lactic acid in the muscles. Scientists have since discovered that any lactic acid that is produced by muscles during heavy work is cleared from the body in a matter of a few hours, so it does not explain the soreness that peaks 24-48 hours after a routine. The most recent theory is that tiny, microscopic tears in the muscle fibers occur during these heavy workouts, and that it is the body's inflammatory response that causes the soreness, stiffness, and even in some cases, mild swelling. For athletes, this process can actually be good, as the healing process that comes from the repair of the tissue can lead to an increase in strength.

It is known that eccentric, or negative loading of the muscles will cause more of this microscopic damage than concentric work. In a nutshell, this means that the lengthening, or lowering phase of the activity will potentially lead to more soreness, especially in a more novice individual. Activities such as running down hill, or performing slow lowerings of a set of bicep curls are examples of eccentric activities. Avoiding these types of activities until your body is more adapted to your new routine will help you stave off the DOMS. For more advanced athletes whose bodies are already adapted, DOMS is still a possibility when new exercises or longer eccentric components are introduced.

So, now that you know what it is, once it rears its ugly head, what are the best ways to treat it? Again, there are many theories out there, most of which are not scientifically proven to work, but a few that are. A few that are not proven to decrease that soreness and painful muscles include increasing your hydration levels, and pre-exercise stretching. Some treatments that have mixed research results include supplementing one's diet with extra Vitamins C, E and other antioxidants, as these are theorized to improve the body's ability to repair cell damage. The use of non-steroidal anti-inflammatory (NSAIDs) medications for relief of post-exercise soreness is well debated. Overall, the medications can help to decrease inflammation caused by the microtears, and can decrease the soreness that is felt. However, there are a few studies that show that the use of these types of medications can actually increase the cellular damage and slow the healing process. As a general rule, it may be best to stay away from the NSAIDs if possible. Treatments that are proven to work for reducing DOMS include using ice after workouts: a good rule is 15-20 minutes 2-3 times a day. Also, the use of compressive garments after workouts may assist in decreasing the effects of DOMS.

There is usually never a reason to see the doctor during a normal bout with DOMS, but there are a few signs for which to be on the lookout. If you experience severe, sharp pains during movement, severe swelling or bruising in the tissues, or an inability to bear weight through your joints, you may want to consider seeing the doctor, as you may have a more severe injury or muscle tear.

So, when you wake up some morning after a workout with the characteristic sore, stiff muscles described above: Congratulate yourself on a job well done, and know that it will get better, and you will once again be able to return to the gym floor.