



DOMS: Delayed Onset Muscle Soreness

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<https://bootcampmilitaryfitnessinstitute.com/injury/doms-delayed-onset-muscle-soreness/>

1.0 Delayed Onset Muscle Soreness (DOMS)

Delayed onset muscle soreness (DOMS) describes a phenomenon of muscle pain, muscle soreness or muscle stiffness that is felt 12-48 hours after exercise, particularly at the beginning of a new exercise programme, after a change in sports activities, or after a dramatic increase in the duration or intensity of exercise.

This muscle pain is a normal response to unusual exertion and is part of an adaptation process that leads to greater stamina and strength as the muscles recover and hypertrophy.

This sort of muscle pain is not quite the same as the muscle pain experienced during exercise as a result of fatigue and is very different than the acute, sharp pain of a muscle injury, which is marked by sharp, specific and sudden pain that occurs during activity and often causes associated swelling or bruising.

The delayed soreness of DOMS is generally at its worst within the first two days following the activity and subsides over the next few days.

DOMS is common and quite annoying, particularly for those beginning an exercise programme or adding new activities. A person who is new to exercise who bikes 10 miles, followed by push-ups and sit-ups is likely to experience muscle pain and soreness in the next day or two.

2.0 DOMS: Causes

DOMS is thought to be a result of microscopic tearing of the muscle fibres. The amount of tearing (and soreness) depends on how hard (exercise intensity) and how long (exercise duration) you exercise and what type of exercise you do. Any movement that your muscle is unaccustomed to can lead to DOMS, but movements that cause muscle to forcefully contract while it lengthens (eccentric contractions) seem to cause the greatest pain.

Examples of eccentric muscle contractions include going down stairs, running downhill, lowering weights and the downward motion of squats and push-ups. In addition to small muscle tears there can be associated swelling in a muscle which may contribute to soreness.

3.0 DOMS: Treatment and Tips for Dealing with Muscle Soreness after Exercise

There is no one simple way to treat DOMS. In fact, there has been an ongoing debate about both the cause and treatment of DOMS. In the past, gentle stretching was one of the recommended ways to reduce exercise related muscle soreness, but a study by Australian researchers published in 2007 found that stretching is not effective in avoiding muscle soreness (**WHO, WHEN**).

So does anything work to reduce DOMS? Nothing has been proven to be 100% effective, but some people have found the following advice helpful, but it is best for an individual to try a few things to see what works for them. Ultimately, the best advice for treating DOMS is to prevent it in the first place.

If you do find yourself sore after a tough workout or competition, try these methods to deal with your discomfort. Although not all are backed up with research, many athletes report success with some of the following methods:

- **Use Active Recovery:** this strategy does have support in the research. Performing easy low-impact aerobic exercise increasing blood flow and is linked with diminished muscle soreness. After an intense workout or competition, use this technique as a part of your cool-down.
- **Rest and Recover:** if you simply wait it out, soreness will go away in 3 to 7 days with no special treatment.
- **Try a Sports Massage:** some research has found that sports massage may help reduce reported muscle soreness and reduce swelling, although it had no effects on muscle function.
- **Try an Ice Bath or Contrast Water Bath:** although no clear evidence proves they are effective, many professional athletes use them and claim they work to reduce soreness.
- **Use the RICE method (Rest, Ice, Compression, & Elevation):** the standard method of treating acute injuries, especially if your soreness is particularly severe.
- **Perform Gentle Stretching:** although research does not find stretching alone reduces muscle pain of soreness, many people find it simply feels good (i.e. it could be the placebo effect).
- **Try a Non-steroidal Anti-inflammatory:** aspirin, ibuprofen or naproxen sodium may help to temporarily reduce the muscle soreness, although they will not actually speed healing. Be careful, however, if you plan to take them before exercise. Studies reported that taking ibuprofen before endurance exercise is not recommended.
- **Try Yoga:** there is growing support that performing Yoga may reduce DOMS.
- **Listen to Your Body:** avoid any vigorous activity or exercise that increases pain. Allow the soreness to subside thoroughly before performing any vigorous exercise.
- **Warm-ups:** warm-up completely before your next exercise session. There is some research that supports that a warm-up performed immediately prior to unaccustomed eccentric exercise produces small reductions in DOMS (but cool-down performed after exercise does not).
- **Morale of the Story:** learn something from the experience! Remember prevention is better than cure.

Certain muscle pain or soreness can be a sign of serious injury. If your pain persists longer than about seven days or increases despite these measures, consult your medical professional.

4.0 DOMS: Prevention

While you may not be able to prevent muscle soreness entirely, you may reduce the intensity and duration of muscle soreness if you follow a few exercise recommendations.

- **Progress Slowly:** The most important prevention method is to gradually increase your exercise time and intensity (see the 10% rule if you need some exercise progression guidelines).
- Warm-up thoroughly before activity and cool-down completely afterward.
- Cool-down with gentle stretching after exercise.
- **Follow the 10% Rule:** When beginning a new activity start gradually and build up your time and intensity no more than 10% per week.
- Speak to a fitness professional if you are not sure how to start a workout programme that is safe and effective.
- Avoid making sudden major changes in the type of exercise you do.
- Avoid making sudden major changes in the amount of time that you exercise.