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**The Pain When You Gain: Delayed Onset Muscle Soreness**

**By Jon Gestl**

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Nothing is more frustrating than the pain and discomfort that occurs in the days that follow a workout. The common muscle soreness and stiffness experienced one to two days after a workout may be so uncomfortable, particularly to the new exerciser, that it may discourage future workout attempts. As someone once said after her first workout, "What's the use of getting fit if I can't even get out of bed in the morning?"

Every exerciser, regardless of experience, deals with sore and stiff muscles following a particular workout. It is important to understand why this occurs and what to do about it in order to deal with this common, although irritating, phenomenon.

Why do I feel so much pain after a workout?

The typical muscle soreness experienced in the days following a workout is referred to as Delayed Onset Muscle Soreness (DOMS) and is characterized by stiffness, pain and sometimes weakness in the exercised muscles. The soreness can last several days after a workout, with the height of the pain occurring about 48 hours following the workout activity.

Studies report that DOMS is most likely the result of microscopic damage or tearing of muscle fibers with the amount of damage correlated to the intensity, amount, and kind of exercise that occurs. DOMS is also related to an individual's exercise history, and is most typical among those who are either starting out in an exercise program or those who change the intensity or type of exercise.

DOMS appears to be strongly affected by eccentric muscle actions. Commonly referred to as the "negative" part of an exercise, eccentric action occurs when a muscle resists while it is forced to lengthen. This action happens in movements such as descending stairs, downhill running, and landing a jump, or with the lowering movements in exercises such as squats, lunges or pushups.

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Although there is no conclusive proof, researchers have suggested that DOMS may also be related to inflammation that occurs in and around a muscle. Swelling may occur following exercise, which increases pressure and causes discomfort.

But I can't get out of bed...How do I deal with this?

Although no surefire documented method exists to entirely get rid of DOMS, some treatments may temporarily alleviate some of the discomfort, such as application of ice, ultrasound and anti-inflammatory medication (aspirin, ibuprofen). Massage may also reduce some of the symptoms, but this method has not been proven.

As the saying goes, "time heals all wounds." DOMS usually dissipates within 3 to 7 days following exercise with no special treatment. Severe pain lasting longer than this time frame may indicate an acute injury and should be treated by a medical professional.

How can I prevent this from happening again?

There is no known technique or drug that entirely prevents DOMS. However, there may be some things you can do before you exercise to keep DOMS at a minimum. Popular fitness theory suggests warming up thoroughly then gently stretching both before and after exercise. Training with your limitations in mind is always a smart idea, building intensity over time rather than attempting an all-out effort on your first try.

The good news: The best prevention is regular exercise. Studies have demonstrated that continued training acts in a preventative fashion to reduce muscle soreness. Regular endurance training, specifically, has been shown to be a method of preventing the onset of DOMS.

The typical soreness experienced after training, or DOMS, is part of the process of getting stronger and reaching your fitness goals. The best method to reduce this somewhat frustrating part of starting or modifying a fitness program is none other than consistent effort.

Jon Gestl, CSCS, is a personal fitness trainer and instructor in Chicago specializing in in-home and in-office fitness training. He is a United States National Aerobic Champion silver and bronze medalist and world-ranked sportaerobic competitor. He can be contacted through his website at

### **Sports Massage – Post–Event**

**By Richard Lane**

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The purpose of a massage after a major event is simply to aid the athlete to recover from the activity.

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This is achieved by reducing post-exercise soreness, re-establishing full range of motion and enhancing blood flow to tight muscles. The length of recovery time from strenuous competition can be dramatically reduced with a good post-event massage. Studies have found that correctly applied massage in the first two hours after activity can be critical for reducing the effect of delayed onset muscle soreness (1). Although they could not detect any change in measured physiological variables, post-event massage did lower the intensity of delayed onset muscle soreness. Post-event massage can also be employed after (heavy) training sessions as well as competition.

The primary goal of post-event massage is very similar to that of pre-event massage (2), namely promotion of circulation and to lengthen tight muscles. However, the difference is that the muscles are now in a state of congestion and fatigue following maximal effort and performance. Therefore the objective is to increase the athlete's rate of recovery by decreasing soreness and fatigue, speeding up the removal of metabolic by-products and relieving the increased tone of the muscles. Please note that the delayed onset muscle soreness is not caused by lactic acid build-up as is commonly espoused. Current research suggests that the delayed soreness may be caused by

- microtrauma of the muscle fibres
- a micro-tearing of the fascia
- the pain-ischemia-pain cycle resulting from overuse, oedema and inflammation or
- a combination of all of these.

A post-event massage is typically administered for around 10 to 15 minutes. Even 5 minutes on the legs after a City to Surf type event is beneficial. It is certainly not a full-body massage. For example, a typical post-event leg routine might consist of:

- compressive effleurage to calm the nervous system
- compression for spreading muscle fibres and also enhancing blood flow
- petrissage for easing muscle tension and
- compressive effleurage as a finishing stroke to soothe. Depending upon the circumstances, the therapist may consider that some gentle therapeutic stretching may be appropriate.

When performing post-event massage, the massage therapist is much more likely to encounter athletes that require first aid. During the massage the therapist should watch for cuts, scrapes, blisters, bruises and mild strains and sprains. However, it should be noted that, depending on the training of the therapist, providing first aid is generally not within the scope of practice for massage therapy. When a sports massage therapist suspects that an athlete has a problem, they should seek the help of a qualified medical staff member at the event.

Although most athletes carry out a warm-down routine after training sessions, they often fail to do so after competition because of exhaustion, elation or even disappointment. An effective post-event massage can help an athlete feel better immediately following a competition. Along with a big psychological lift, it can allow the athlete to recover more quickly. Almost all athletes look forward to seeing massage therapists at an event because they know that they will enjoy a well-deserved

post-event massage.

(1) "Massage decreases intensity of delayed soreness". J.E. Hilbert, G.A. Sforzo and T. Swensen.

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British Journal of Sports Medicine 2003. Issue 37. pp72–75. (2) "Sports Massage - Pre–Event". R. Lane.

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Richard Lane is a qualified remedial and sports massage therapist, with a mobile massage practice in Sydney's Inner West (

). Health fund rebates. ATMS 13020. Phone

0421 410057

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