The Impact of Massage on Athletic Performance for Runners

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Abstract

Massage therapy involves the manipulation of soft tissue using hands, rollers, a hard surface, or suction cups for the promotion of health and well-being (Paolini, 2009). Massage can be used for enhancing relaxation, breaking up scar tissue, decreasing heart rate, lowering blood pressure, and reducing pain (Paolini, 2009). When muscles in the body are put under stress due to physical activity or even emotional stress, the myofascial tissue tenses up or spasms. Massage can release that tension (Paolini, 2009).

Massage therapy has traditionally been used in sports for preventing injuries, reducing mental stress, increasing force production, and promoting recovery. There are several techniques used to achieve these different benefits, such as myofascial release as a pain reliever or Swedish massage for relaxation. How massage impacts the nature of a performance depends on its timing in the training cycle, the intensity, the method used, and the duration of the massage. Evidence supports both positive and negative effects of massage-therapy techniques for runners, both physically and psychologically. This article provides runners with a helpful guide to improve performance through manual myofascial manipulation based on specific techniques, how often it should be done, and when it should be done during any training regimen.
Why is massage beneficial for runners?

Massage has long been thought to be a beneficial practice for individuals in terms of relaxation and mental well-being. This practice, however, is beneficial for more than just the average individual. Athletes, including runners, can experience great benefits from massage for many different reasons. These benefits can come in both mental and physical forms.

A well-performed, pre-event massage can be greatly beneficial to an athlete’s mental state going in to his or her performance. This massage would help the individual become mentally prepared for the event because it facilitates complete relaxation and total focus on the task at hand. During a pre-event massage, the runner would become more mentally relaxed, as the physical relaxation of the muscle tissues spreads throughout the body. This relaxation allows the runner to better focus on visualization of the event in order to enter a stronger state of readiness (Draper & Tessier, 2005).

Along with the clear psychological benefits, there are also multiple physiological benefits for runners. While a massage may not directly impact flexibility, it can serve to stimulate circulation and thus increase the amount of oxygenated blood reaching the muscle tissues (Draper & Tessier, 2005). Additionally, massage can decrease heart rate and blood pressure, and alleviate pain. Pain in the myofascial tissues is common for runners due to their long, strenuous bouts of exercise. Myofascial release focuses on removing tension and tightness from a region of soft tissue, which is commonly caused by a spasm (Paolini, 2009). A few different massage techniques can be used to achieve this task, all including a form of direct pressure on the afflicted area.

Relief within the muscle tissues themselves is not the only physiological benefit that is seen from
mass age. Additional relief is seen in the joints, ligaments, tendons, and even bones of an individual, individual, due to the connectivity of the body. Muscles attach to the tendons, which attach to the bones, which attach to other bones via ligaments. Tightness in a muscle could add strain to a tendon, which could pull abnormally on a bone, leading to strain on a ligament. Thus, a trickle-down effect from the muscular tightness could possibly evident in an athlete’s body. A tight muscle could ultimately trigger pain and sensitivity in the surrounding features. Therefore, relief of the spasm in the muscle through massage is a beneficial treatment of the perceived pain.

Massage can also play a role in the prevention of injury. A tight muscle may seem like a small issue at the time, but if left untreated, it could lead to a much larger issue such as irritated tendons or joints. These issues, if they are not addressed, could dramatically impact one’s ability to perform even the simplest tasks, such as walking up or down the stairs or getting out of bed in the morning. For a runner, a tight muscle could result in not being able to complete a race or training run on an easy day. On a larger scale, a career-ending injury could surface as a result of a tight muscle. Thus, there is great importance and value for using massage as a runner in order to maintain proper muscle tension.

**What are the negative effects of massage for runners?**

Some massage techniques come with a greater risk than others. Some athletes have a lower pain tolerance than others, so the methods that require more pressure, such as myofascial release or deep-tissue massage, could be considered painful and should be avoided if a runner is attempting to elicit a relaxed response. After soft tissue is manipulated, there can be soreness for up to 24 hours due to inflammation or bruising (Weerapon, Hume, & Kolt, 2005). Therefore, longer and
deeper treatments should be done with ample time before any competition or a harder workout.

Force production should be carefully considered when choosing a massage technique, because a deep massage can reduce force production. The fascia has plasticity, which means that after lengthening the fascia repeatedly, it can retain its lengthened form. This phenomenon has been seen in gymnasts after years of extensive stretching (Biel, 2014). Greater amounts of force require quick rebounding of muscles, and when the muscles have been stretched past the point of effective rebounding, force production is reduced. After 30 minutes of massage, an individual can see a significant difference in force production, especially as contraction velocity increases (Hunter, Watt, Watt, & Galloway, 2006). Permanent lengthening of muscles as a result of massage is unlikely, but a temporary lengthening can occur and reduce force production for a couple of hours.

Besides the negative effects massage can have on the body, it can also have a negative impact on an individual’s schedule and wallet. If the tension or dysfunction in the muscles is severe enough, a trained professional may be the most effective way of treating the ailment as opposed to self-massage or the use of rollers. Receiving treatment from a trained professional costs money and it is usually not covered by insurance. Massage therapy was an $8 to $10 billion industry in 2013 and cost an average of $65 an hour (American Massage Therapy Association, 2014). Like any treatment, improving performance through manual manipulation takes time, and will likely require more than one session, which may be an important consideration for a busy athlete.

**How does massage alter the structure and function of muscles?**

Massage reduces myofascial tension through manual manipulation, which alters the structure of
the muscle on a cellular level and improves its ability to contract forcefully. Understanding how a muscle contracts on a cellular level is essential to understanding how massage can alter the structure and function of a muscle group. Figure 1 depicts the basic structure of a muscle cell. Before a muscle can activate, the brain sends an electrical signal that initiates the release of ions, which ultimately causes the muscle cells to contract. The contraction and relaxation of a muscle involves the lengthening and shortening of a sarcomere. A sarcomere consists of thick and thin filaments. The thick filaments stay in place while the myosin heads of the thick filaments grab onto the thin filaments, pulling the thin filaments closer to the M line.

At a certain point, the muscle can no longer contract because the sarcomere has shortened as far as it can. Therefore, if a muscle is tense and the sarcomere is shortened, it cannot contract effectively because it is already in a state of contraction. Similarly, when a sarcomere is lengthened too far, the myosin heads cannot grab onto the thin filament for an effective contraction. Both of these scenarios involve something known as muscle tone, which is a state of partial contraction in which the muscle is at its optimum length and can effectively contract when a signal is sent (Saladin, 2012). Massage promotes proper muscle tone for effective contraction during running.

Imagine trying to lift an object off the ground without bending your knees. The hamstrings cannot contract as forcefully because the sarcomeres are stretched too far. Muscle tone is why the duration of a massage prior to activity becomes critical for performing well. If the muscle is stretched for too long, then there is not enough overlap between the thick and thin filaments for the myosin heads to grab onto each other for a forceful contraction (Saladin, 2012).
When and for how long should a runner receive a massage for their best performance?

To answer this question, two factors need to be assessed. The point in the training cycle and the individual runner must be considered. Each runner is different, as is each event. The timing of the massage is vital, as a runner would not want a long, relaxing, deep-tissue massage directly before an event. However, in the off-season, this is the ideal type of massage. An off-season massage should last 30 to 60 minutes, promoting relaxation and blood circulation. This only needs to be done about every other week or as needed for maintenance. The individual runner’s personal preferences can help determine how often he or she truly needs to receive a massage in the off-season.
In the pre-season, there is again a large amount of variation based on the individual runner. A runner should receive a massage approximately three times per week for anywhere between 15 and 60 minutes during this part of the training cycle depending on how tight the runner’s muscles are feeling and the level of his or her stress. For example, if a runner is extremely tight and stressed, he or she would want to have a longer massage to ensure the relief of the muscle tightness along with full relaxation. Additionally, the runner may use classic hands-on massage techniques with varied pressure, or rolling out techniques so that he or she has better personal feedback with the amount of pressure being used. One can better control the pressure when rolling out than when another person is performing a massage.

During the season, a runner can receive a 15- to 30-minute massage after each practice or event. A runner’s training regimen ramps up drastically in intensity and volume during the season, so muscular and mental relaxation are increasingly important. During this time, deep pressure should be avoided, as it will cause the muscles more harm than benefit. Soft to medium pressure should be used simply to relieve tension and promote increased blood flow through the tissues. At this point in the training cycle, the athlete should mainly use rolling out techniques for his or her massage. Again, this is so that the individual has full control of the pressure applied.

The best timing and duration of a massage should be determined by the point in the training cycle as well as the athlete’s personal preference. With the mental component of massage always being a factor, it is important to consider the athlete’s preference in order to determine the best time and duration for a massage. This personal preference is also a factor in determining the amount of pressure and type of massage used.
What is the best massage technique?

There is no “best” massage technique that is the “cure-all” for any ailment, tightness, or amount of stress being experienced. Each massage technique has its best application in specific settings. For example, a long, deep-tissue massage is best used when an athlete is in his or her off-season and has time for recovery from the soreness of the massage and from a difficult training session. A short, soft-pressure Swedish massage may be better applied when an athlete is in the midst of the season and feeling an extreme amount of pressure surrounding performances. Mentally and physically, there are benefits to each kind of massage, as long as that type of massage is

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<td><strong>Recommended Massage Frequency, Duration, and Technique for a Runner’s Best Performance</strong></td>
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<td><strong>Off-season</strong></td>
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<td><strong>Pre-season</strong></td>
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<td><strong>Frequency</strong></td>
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<td><strong>Technique</strong></td>
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appropriately applied. Benefits from massage can be seen in as little as one session; the key is for the individual to listen to his or her body and pay attention to the guidelines set out for timing and duration of massage at that particular point in the training cycle.

**Figure 2:** Rolling with body weight. Medium to deep pressure.

**Figure 3:** Myofascial release. Shallow to deep pressure.

**Figure 4:** Rolling with a malleable plastic stick. Shallow to medium pressure.

**Figure 5:** Rolling with softball. Pin-pointed with deep pressure.
References


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