

Muscle Soreness and Percussive Therapy Devices: Do they work?

As percussive therapy devices such as the Theragun increase in popularity, it is important to understand why and how we are using them. Because these devices are relatively new, there is limited research available on their effectiveness. However, the principles they are based upon have been studied a bit more. The goal of this article is to provide you with information about the theory behind use of these devices and advice on how to use them safely should you choose to do so.

Before we get into these devices specifically, a review of what happens with exercise is warranted. Each bout of exercise causes small tears in a muscle. The rebuilding of these tears are what helps us gain strength and are a normal part of exercise. When the tears are too big, as happens with accidents or doing too much too quickly, we then call it a muscle strain/tear and we have an injury.

Another phenomenon well known by athletes and exercisers ranging from novice to elite is that of delayed onset muscle soreness (DOMS). Percussive devices are used to help eliminate or shorten the duration of DOMS. There are a few theories of what causes DOMS including lactic acid build up, muscle spasm, connective tissue damage, muscle damage, inflammation, and the enzyme efflux theories (2). I won't go much into the lactic acid theory here, but it is presumed that a build-up of lactic acid in the muscle contributes to soreness and reduced muscle performance. This theory was introduced decades ago and we have learnt a lot since then. There are many more factors contributing to exercise induced metabolic acidosis (lactic acid build-up), namely breathing, but we will leave this for another time. For our current arguments' sake we will assume that lactic acid build up plays a role.

So after a hard workout lots of people have experienced DOMS which normally occurs 24-48 hours after an injury. Not only is this sore, but might lead to muscle tightness and limited strength for a few days. We will discuss the four most popular ways of dealing with this: rest, recovery workouts, massage, and percussive devices. Stretching is also a commonly used method but has not been shown to have any effect on muscle soreness or DOMS(2). In a study done in 2014 they compared the effectiveness of rest, massage and percussive devices for managing DOMS. What they found was that vibration/percussive therapy and massage were both effective in preventing or reducing DOMS. Both of these strategies were more effective than rest alone. However, massage was superior to percussion in the restoration of 1 rep max strength. Aligned with this, there was a literature review done in 2003 and published in 2012 comparing treatments for DOMS. This review provides a lot of information and includes options not included here such as cryotherapy and NSAID's (note this study did not include percussive devices). For anyone interested in more please see the article by Cheung, Hume, and Maxwell in the references. In summary, this review found that exercise is the most effective means of reducing and eliminating symptoms of DOMS. Distance runners will be familiar with this concept as they often do a recovery run or walk after a marathon or longer race. And from personal experience, despite the pain of that run, I have to side with the science and say that it works and is well worth the effort.

Because percussive treatments are so new, the jury is out on whether or not they are actually effective. But seeing as safe options such as massage and recovery exercises are known to work as good if not better, I would err on the side of caution with this one. When asked about these devices I generally equate it to getting small punches in the muscle for a few minutes after they exercise. On offering this to clients, I have yet to get a 'yes' in response to this. But if you break down the movement of the devices this is essentially what it is, albeit at a certain speed and probably better aim than I would have. My main point of caution with these devices would be to avoid the neck, upper back and shoulder region, including under the armpit. If you are having tightness and

soreness in these areas it is safer to get a massage by someone qualified to reduce your risk of further injury.

And for those of you that have made it this far here is my advice for DOMS:

- Do a recovery workout at about 30% of your maximal effort the day or two after a hard workout
- If you do not want to use your sore muscles, find a workout that uses other muscles to improve blood flow and oxygenation to help that tissue heal (swimming and cycling are generally good options)
- Use suitable anti-inflammatory strategies you find helpful and cleared by your GP/pharmacist
- If you are unsure what to do to manage your DOMS or injury, see a qualified professional to get guidance and advice



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