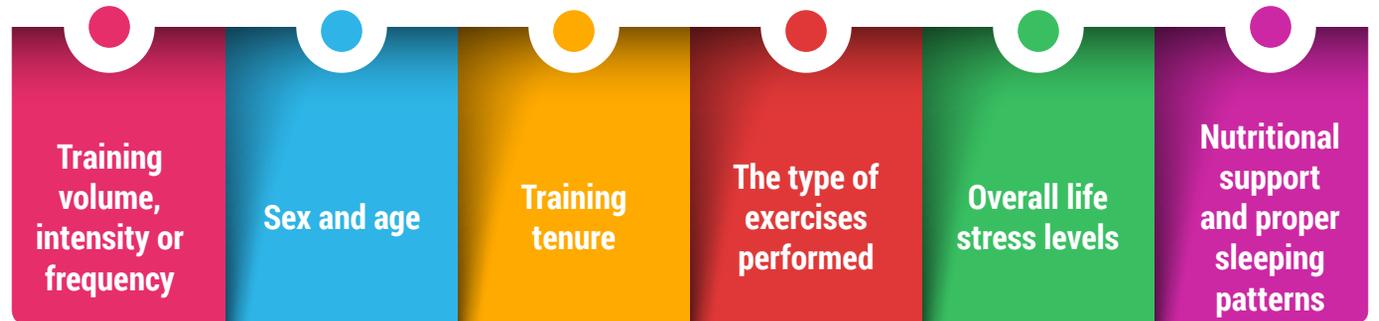


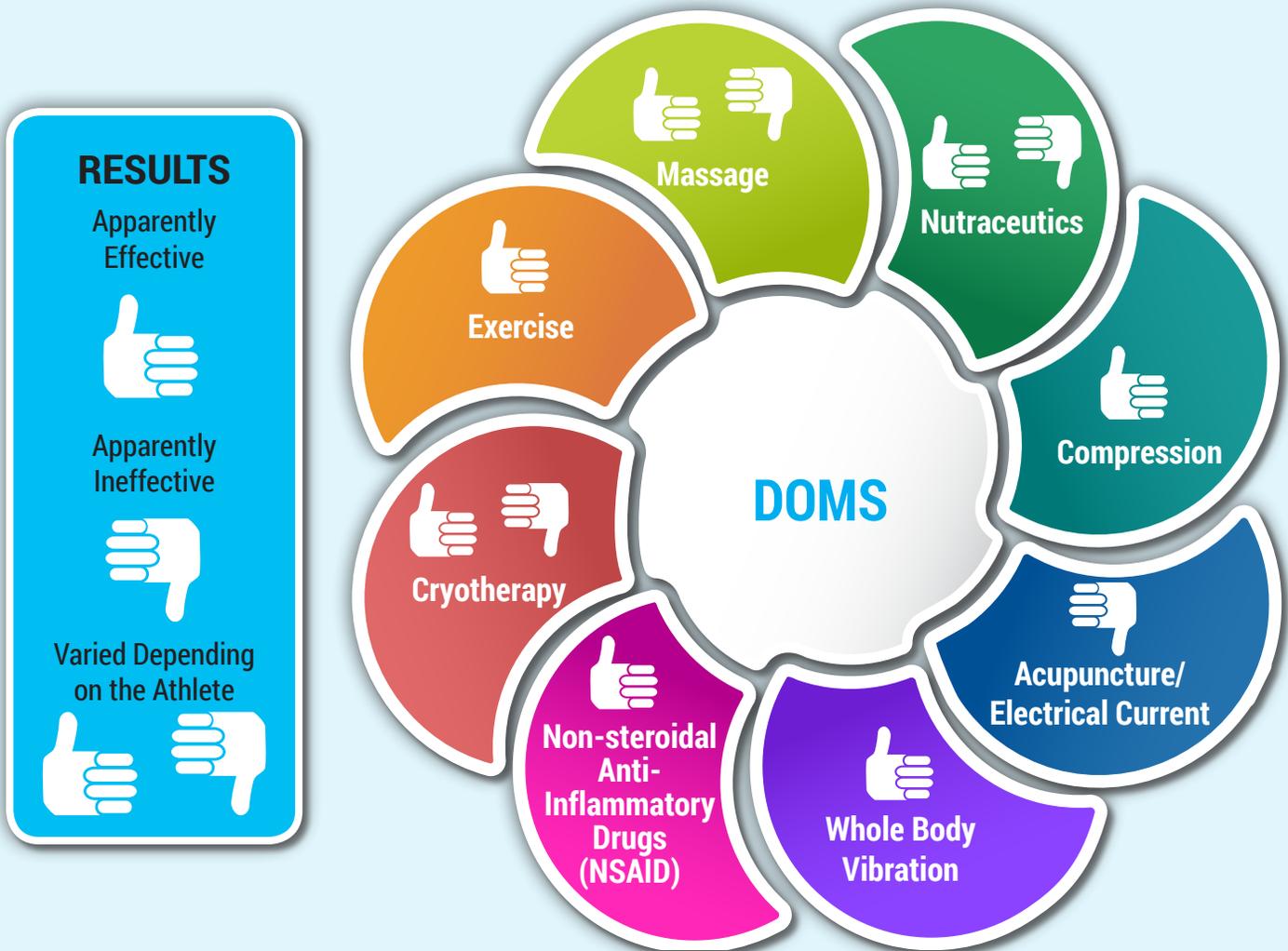
# Useful Exercise Recovery Tools

All adaptations to training occur during recovery periods between workout session hours, the specific timing of which depends on the activity performed (usually within 4-8 hours after resistance training or 8-12 hours after endurance training). Therefore, it is in the exercise professional's best interest to maximize systemic homeostasis during recovery periods for clients via nutritional education as well as teaching the individual how to use recovery enhancement tools. Even though nutrition will be one of the most useful tools in itself, there are also various economical tools a trainer should have in their repertoire (or recommend the client purchase when necessary) to enhance the comprehensive service experience. Long gone are the days where static stretching is the primary recovery protocol for improved performance. There are several factors which can impact recovery as seen in the following figure, but there are simple tools available to address the most common client complaints.

## Major factors which can impact exercise recovery:



Delayed-onset muscle soreness (DOMS) and myofascial restriction are primary musculoskeletal factors which can impact the perception of recovery and increase the rate of perceived exertion (RPE) during subsequent bouts of exercise. DOMS increases within 24 hours after a workout, and usually peaks between 24-72 hours. Low fitness level, heavy eccentric work, detraining, performing new exercises, using greater ranges of motion (ROM) than usual and drastically increasing the training volume are major risk factors for DOMS. The following figure illustrates what research has shown to be potentially effective for alleviating DOMS.



Myofascial restriction is also common among exercisers and athletes who engage in heavy loading with high volume as well as those who experience chronic postural issues or distortions. Myofascial restriction results in reduced ROM and negative changes to movement biomechanics, which can result in painful trigger points – which in turn further reduce mobility (negative feedback loop).

Restriction and soreness are the primary blockers of optimal muscular recovery between training sessions, especially of higher frequency (outside of direct injury, strains or sprains). The following tools may be useful in mediating some of these most common complaints to help improve overall perception of recovery, performance and clientele compliance.

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## Foam rolling:

A foam roller or related implement can be very useful for reducing myofascial restriction. The compressive and massaging action stimulates receptors in nerve and muscle tissue which tells the central nervous system to reduce the tone (relax) of associated fibers and connected fascia. This can minimize/heal painful trigger points over time and enhance mobility in select areas. A compressive rolling action is usually performed for 30-60 seconds, with high-pressure holds over painful trigger point areas of (potential) nerve entrapment. Additionally, kneading the tissue through massage rolling improves blood mobility and recovery. Tennis or lacrosse balls are the preferred tools for myofascial release for smaller muscle groups or harder to reach areas like the border of the scapulae.



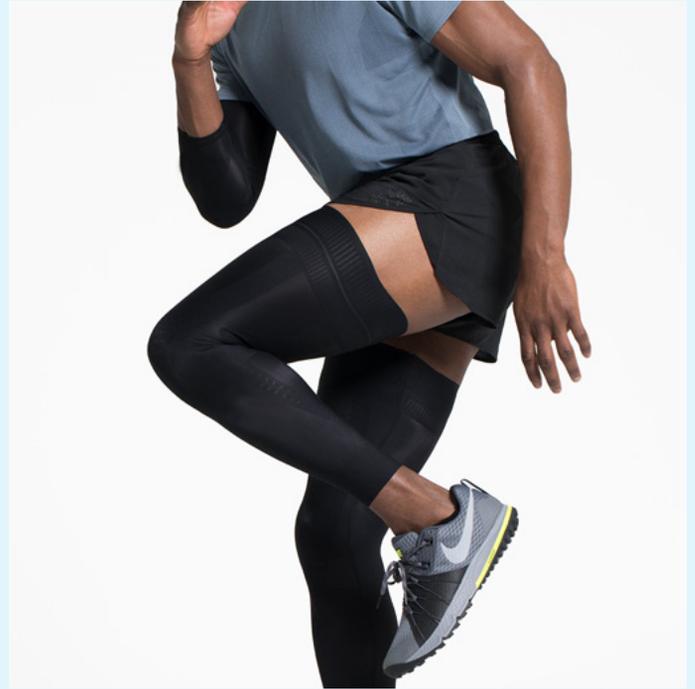
## At-home electronic stimulation machine (transcutaneous electrical nerve stimulation [TENS] unit):

At-home TENS units are available for as low as \$30, while the products with optimal and lasting function will generally run between \$125-250. The device will usually be small and battery-operated with 2-4 leads that have sticky pads to be attached to the skin. When the device is turned on, adjustable electrical impulses are sent to the tissues through the leads. The user will feel small involuntary contractions/twitching of the underlying muscle/fascia and often a tingling sensation. Electric stimulation therapy can be very useful for muscle spasms and major soreness as the electrical impulses impede pain signaling, and can remove contractures at the site of insult. They may also stimulate endorphin release, which work as natural painkillers. They are best for short-term relief (10-20 minutes) of painful nerve impulses autonomically sent to an over-worked/over-stretched muscle. The reduction in pain and central nervous system relaxation can improve recovery.



### Vibrating self-massagers/roller:

Massage, in general, can be very useful for reducing muscle soreness and discomfort as credited by the entire massage therapy field. When massage is combined with high-frequency vibration, positive improvements in perceived soreness, mobility and muscle relaxation can be achieved. Vibration increases blood flow to the area while the compressive action of the massager provides benefits similar to acupuncture devices. The best vibrating, deep-tissue, self-massagers will have multiple attachment heads to address larger or smaller muscles and ergonomic design which makes it easy for the user to hit hard-to-reach places such as the upper back. The rollers have different vibrating settings and come in varied textures to attenuate the muscle stiffness.



### Compression sleeves/pants:

Compression sleeves used around joints with arthritis (e.g., knees) or related issues as well as compression pants/suits have been shown to reduce musculoskeletal measures of stress between high-intensity bouts of work, such as interval sprinting. They should be worn during the exercise bout, dynamic cooldown, and during an acute recovery period, as logistically possible. This works in a manner somewhat similar to foam rolling where the compressive action of the sleeve or clothing helps to activate receptors in the underlying tissue that promote greater post-work relaxation and reduce strain during the exercise stress itself.





## Heating pads & cold packs/cryotherapy:

So, does one use fire or ice? Heat and cold can both be useful for optimizing recovery and minimizing pain/inflammation - but the exercise professional must know when to use each application or there can actually be negative consequences. Applications of therapeutic cold packs or cryotherapy (immersion in cold water – body segment or whole body) can impede recovery signaling from inflammation in the muscle; rather cold is best applied to joints, not trained muscle, right after a workout to reduce inflammation and swelling. Heat right after a stressful session or instigation of muscle swelling via injury can actually increase inflammation and reduce metabolic

homeostasis due to heightened thermal management. Heat therapy via heating pads or related implements are best used for arthritic or chronic pain impacting specific joints or segments (e.g., lower back or shoulder) between exercises sessions, or at night, but not directly after workouts (within one hour after). In general heat will increase blood flow and can reduce long-term pain for improved healing/mobility while cold is best for limiting acute pain/nerve responses and inflammation.

Integration of one or a number of the previous recovery implements may help a client improve their mobility and overall recovery to training stresses. The consequent increase in compliance and training outcomes will ultimately translate to more money in the trainer's pocket in the long run. ■



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The CEU Quiz is now available online at:  
<http://www.ncsf.org/continued/onlineceu.aspx>