FOAM ROLLING FOR PERFORMANCE AND RECOVERY

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Foam rollers and massage sticks have increased in popularity in the fitness industry and are often recommended by strength and conditioning professionals (5,6,10). There is evidence that shows positive effects of foam rolling on range of motion (ROM), recovery, and performance (8,9,10,14). Despite its effectiveness, the mechanisms as to how foam rolling works are not fully understood. However, it is likely that acute responses in foam rolling are similar to those elicited by manual therapy, which are thought to be neurophysiological in origin (24).

Many different health professionals including physical therapists, athletic trainers, and massage therapists use foam rolling clinically. However, foam rollers and massage sticks allow individuals to apply manual therapy on themselves, making them portable and affordable forms of therapy.

SELF-MYOFASCIAL RELEASE (SMR) FOR WARM-UP

It is well documented that pre-exercise static stretching can have a negative effect on strength and power but foam rolling has been shown to increase ROM without decreasing muscular performance (11). SMR may be a substitute for static stretching before workouts, especially if combined with dynamic warm-up exercises (8,9,11,16). In fact, two recent systematic review papers on foam rolling have concluded that foam rolling acutely increases joint ROM and decreases muscle soreness without negatively impacting performance (2,15). However, it should be noted that dynamic stretching and foam rolling elicit similar increases in hip flexion range of motion (3).

FOAM ROLLING FOR RECOVERY

SMR through the use of foam rolling may also be beneficial for post- and between-workout recovery. Foam rolling has been shown to decrease delayed onset muscle soreness (DOMS) when performed following exercise (9,13). One study examined the effect of post-exercise foam rolling on muscle soreness and performance. The subjects completed 10 sets of 10 repetitions (German volume training protocol) of the back squat at 60% of one repetition maximum (1RM). Subjects who performed a 20-min foam rolling session immediately 24 hr and 48 hr after exercise had significantly lower quadriceps DOMS than those who did not (13). Additionally, the foam rolling recovery work caused faster recovery of muscular function as measured by sprint time, power output, and dynamic strength-endurance (13). Foam rolling has also been shown to speed heart rate and blood pressure recovery following high-intensity exercise as compared to placebo treatment (1).

FOAM ROLLER DENSITY AND OTHER TOOLS

The increased popularity of SMR and foam rolling has led to the development of many different types of foam rollers, such as softer, less dense, harder, and more rigid rollers. There are also multilevel rigid rollers, which have ridges of isolated contact area as opposed to the standard foam roller. Research suggests that the significantly higher pressure and isolated contact area of the multilevel rigid roller can have a potentially greater benefit (7). Although high-density rollers may be more therapeutic, they can

cause significant discomfort during use. Many people begin with a softer roller and progress to a firmer one as their pain tolerance increases.

However, foam rollers are not the only SMR tools available; massager sticks and massage balls, including tennis and l acrosse balls, are also used for this type of therapy. These tools are smaller and more portable than foam rollers and can be good alternatives to the standard foam roller. Massage sticks have been shown to increase range of motion while not decreasing muscle strength (17).

OPTIMAL PROTOCOL FOR FOAM ROLLING

Foam rolling has been shown to cause significant ROM increases when paired with a static stretching routine. A recent study found that this combination significantly increased passive hip-flexion ROM compared to foam rolling or static stretching alone (12).

One protocol that has shown to be effective in the literature involves rolling the length of the muscle 3 – 4 times over the course of 1 min, followed by 30 s of rest, followed by another bout of foam rolling for 1 min (10). Tables 1 and 2 provide a sample program for SMR through the use of a foam roller and massage stick.

CONCLUSION

SMR through the use of foam rolling or other implements is a time and cost-efficient method of increasing performance and recovery. One of the most common mistakes when using foam rollers or other SMR tools is going too fast. Some discomfort or slight pain is normal when working on sensitive areas, and moving too quickly over them can take away the full benefit of the therapy. Although SMR may be effective, it is always advisable to consult a physician or other healthcare professional before beginning any type of self-treatment.

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FIGURE 1. FOAM ROLLER – UPPER BACK

FIGURE 2. FOAM ROLLER – LOWER BACK

FIGURE 3. FOAM ROLLER – HAMSTRINGS

FIGURE 4. FOAM ROLLER – HIP ADDUCTORS

FIGURE 5. FOAM ROLLER – ILIOTIBIAL BAND

FIGURE 6. FOAM ROLLER – GLUTEALS

FIGURE 7. FOAM ROLLER – ACHILLES TENDON

FIGURE 8. FOAM ROLLER – LATS AND TERES MINOR

FIGURE 9. FOAM ROLLER – TRICEPS

FIGURE 10. MASSAGE STICK – QUADRICEPS

FIGURE 11. MASSAGE STICK – CALF

FIGURE 12. MASSAGE STICK – HAMSTRINGS

FIGURE 13. MASSAGE STICK – LOWER BACK

TABLE 1. SAMPLE FOAM ROLLING ROUTINE

Calves: Pass along the entire muscle pointing toes in and out to get the entire muscle.	**Hamstrings:** Pass along the entire muscle pointing toes in and out to get the entire muscle.	**Glutes:** Cross one leg over the other knee and roll.	**Iliotibial (IT) Band:** Roll the length of the IT band from hip to the lower leg. This area may need extra work.	**Adductors:** Pass along the entire muscle, spending extra time on the upper half of the muscle.
Middle Back: Pass along the left, middle, and right sides of the back with both hands behind the head. Repeat while hugging the body with both arms.	**Upper Back:** Pass along the left, middle, and right sides of the back with both hands behind your head. Repeat while hugging the body with both arms. Pay special attention to the trapezius.	**Lats:** Roll along the entire length of the muscle.	**Shoulders:** Put the hands together as if sleeping on one side, then pass along entire shoulder.	**Triceps:** Pass along the triceps, spending extra attention near the elbow. Flex and extend the elbow while rolling.

TABLE 2. SAMPLE MASSAGE ROLLER STICK ROUTINE

Quadriceps: Roll along all parts of the quadriceps muscle.	**Hamstrings:** Flex the knee and roll along the hamstrings.	**Calves:** Pass along the entire muscle, hitting the inside and outside of the calves.	**Gluteals:** Stand up and roll along all the gluteal muscles.	**Lower Back:** While standing, roll up and down the lower back.