

4. Clerk, H. H. (1959). Application of movement to health and physical education. Englewood cliffs N.J. printice Hall.
5. Hemberg, D. (1963). Invention in the industrial research laboratory. *Journal of Political Economy*, 71 (2), pp. 95-115.
6. Naney J. Nersessian (2006). The cognitive cultural systems of the research laboratory. *Organization Studies*, 27 (1), pp. 175-145.

**HUSAIF K. A.,**  
*Ph.D. Scholar, Department of Physical Education,*  
*Pondicherry University*  
**ANSON C.,**  
*Ph.D. Scholar, Department of Physical Education,*  
*Pondicherry University*  
**Dr. SULTANA D.,**  
*Professor, Department of Physical Education,*  
*Pondicherry University, D.Sc.*  
*(India)*

## **MODERN WARM-UP STRATEGY: BENEFITS OF PRE EXERCISE MAYO FACIAL RELEASE WITH FOAM ROLLER**

*Хусайф К. А., Енсон К., Султана Д. Сучасна стратегія розігрівки: переваги перед вправами Mayo Facial Release за допомогою поролонового ролика.*

*Ключові слова: напруга м'язів, самоміофасціальне звільнення, поролоновий ролик.*

***Abstract:** Foam rolling has already proved as a cooling down tool in many researches and foam rolling gained popularity in recent years as a pre-workout warm-up strategy. The purpose of the paper to examine the scientific evidence supporting that foam rolling may increase flexibility, reduce muscle soreness and improve athletic performance. Foam rolling is believed to work by the increasing blood flow and oxygenation to the targeted muscles, which can help improve tissue mobility and reduce the risk of injury during exercise. The optimal timing and duration of foam rolling for warmup purpose are still unclear and further research is needed to fully understand its effects. Foam rolling has become popular in the fitness community as a self-mayo facial release technique.*

***Keywords:** muscle tension, self-myofascial release (SMR), foam roller.*

**Introduction:** Foam rolling is a form of self-myofascial release that has gained popularity in recent years as a pre-exercise warm-up strategy. It involves using a cylindrical foam roller to apply pressure to different areas of the body, with the goal of reducing muscle tension, increasing flexibility, and improving range of motion. The underlying concept behind foam rolling is that it helps to release «knots» or «trigger points» in the muscles and fascia, which can contribute to tightness and limited mobility. By applying pressure to these areas, foam rolling is believed to stimulate the body's natural healing processes, increase blood flow and

oxygen to the muscles, and promote relaxation and recovery. Research has shown that foam rolling can be an effective warm-up strategy, especially when combined with other techniques such as stretching and dynamic movements.

Foam rolling can be an effective warm-up strategy for athletes and fitness enthusiasts alike to improve flexibility, mobility, and athletic performance and make valuable addition to training programs. involves using a cylindrical foam roller to apply pressure to various parts of the body, such as the quadriceps, hamstrings, and calves. The goal of foam rolling is to help improve range of motion, reduce muscle soreness, and prepare the body for exercise and recover the body from the prior condition after an intensive training. Foam rolling works by using a technique called self-myofascial release. The technique involves applying pressure to certain areas of the body to release tension and tightness in the muscles and fascia. Foam rolling can help break up fascial adhesions and increase blood flow to the muscles, which can help improve flexibility and reduce the risk of injury. Additionally, foam rolling can stimulate the nervous system and prepare the body for exercise, making it an effective warm-up strategy.

**Self-myofascial release (SMR).** SMR with a foam roller work as pre-exercise warm-up tool and cooling down tool. SMF achieve with a foam roller and that help improve muscle flexibility and range of motion and reduce the risk of injury during exercise [2]. Reduce muscle soreness and perceived pain following exercise. Increasing muscle activation and power output during exercise. Improve blood flow and nutrient delivery to muscles, which can enhance recovery following exercise [2]. Improve joint range of motion, improve exercise performance and reduce the risk of injury.

Self-myofascial release (SMR) technique that involves applying pressure to the soft tissues in the body, such as muscles and fascia, to release tension and improve mobility. Foam rolling is one of the most common SMR techniques used by athletes and fitness enthusiasts. SMR with a foam roller can be a beneficial pre-exercise warm-up tool for improving flexibility, reducing muscle soreness, enhancing muscle performance, promoting recovery, and improving joint range of motion. foam rolling the hamstrings improved flexibility and range of motion [6]. rolling the quadriceps after exercise reduced muscle soreness and improved muscle function [11] rolling the quadriceps prior to exercise improved muscle strength and power output and after exercise reduced muscle soreness and improved muscle function [11] and increased blood flow to the muscle tissue [3].

**Foam rolling.** Foam rolling use as a warm-up and as the cool-down that act as recovery tool to help alleviate muscle soreness and stiffness after physical activity. self-myofascial release (SMR) involve applying pressure to specific areas of the body to release tightness and tension in the muscle tissue. The athletes, fitness enthusiasts and physical therapist use cylindrical foam roller to apply pressure to various muscle groups, with the goal of releasing tension in the muscle tissue and the connective tissue (fascia) that surrounds it. And Foam rolling has gained popularity among athletes and fitness enthusiasts due to its potential

benefits for improving joint range of motion, reducing muscle soreness and fatigue, and enhancing muscle performance. foam rolling is a versatile and accessible tool that can be used by individuals of all fitness levels and backgrounds to improve their physical performance and overall well-being and to apply pressure and massage various muscle groups in the body.

**Benefits of foam rolling.** The foam rolling can be useful for the both as a warm-up strategy and as a recovery tool. Foam rolling prior to the exercises Improved flexibility and range of motion and increase hip joint range of motion [2]. And improve ankle dorsiflexion range of motion [6]. foam rolling prior and after the exercise reduced muscle soreness following exercise-induced muscle damage [2]. And reduce perceived pain following a bout of high-intensity interval training improve sprint performance in healthy male athletes [10], and improve lower body power output in female athletes [1].

Foam rolling improved recovery of muscle function following high-intensity exercise. Enhanced recovery, the foam rolling reduced blood lactate levels and improved heart rate recovery following a bout of high-intensity exercise. Rolling of the quadriceps and hamstrings improved knee joint range of motion and flexibility [10] reduced quadriceps and hamstrings muscle soreness and perceived fatigue [11]. The foam rolling of the quadriceps and glutes increased blood flow to the muscle tissue that potentially improve muscle recovery [13] improve sprint time and power output performances [12], foam rolling of the calves improved ankle dorsiflexion, range of motion and enhanced neuromuscular functions [14].

Foam rolling cosier as a warm-up strategy by triggering a process called self-myofascial release (SMR). SMR involves applying pressure to certain areas of the body to release tightness and tension in the muscle tissue and the connective tissue (fascia) that surrounds it. As a warm-up strategy, foam rolling can help to increase joint range of motion and flexibility, which can be particularly helpful for athletes to perform movements that require a high degree of mobility, such as gymnastics, martial arts, or dance. The foam rolling can have a positive impact on muscle activation, particularly in the glutes and quadriceps, calves to reduce muscle stiffness and soreness, which can improve overall performance and reduce the risk of injury.

**Conclusion.** Foam rolling can be an effective pre-exercise warm-up tool and rolling the hamstrings, quadriceps, and calf muscles that can improve joint range of motion [1], increase muscle temperature [2], enhance muscle activation [3], and improve neuromuscular function [4].

The foam rolling can be an effective tool for warming up the body prior to exercise, improving range of motion, muscle activation, power output, and reducing muscle fatigue. foam rolling of the quadriceps prior to exercise increase muscle activation and improved knee joint stability during a squatting exercise [7] and reduce muscle fatigue during [8]. Foam rolling of the hamstrings and quadriceps prior to a squatting exercise resulted in Improve Power Output [3] and Power sprint [6, 9]. Foam rolling is an effective warm up strategy same as cooling

down tool that promoting muscle relaxation, enhancing joint range of motion and potentially improving exercise performance. The current literature suggests that foam rolling can be useful to the both scenarios as warming up and cooling down tools.

### **References:**

1. Su, H., Chang, N. J., Wu, W. L., & Guo, L. Y. (2017). Acute effects of foam rolling, static stretching, and dynamic stretching during warm-ups on muscular flexibility and strength in young adults. *Journal of Sports Science and Medicine*, 16 (2), 154-160.
2. MacDonald, G. Z., Button, D. C., Drinkwater, E. J., & Behm, D. G. (2019). Foam rolling as a recovery tool after an intense bout of physical activity. *Medicine and Science in Sports and Exercise*, 51 (2), 336-343.
3. Bradbury-Squires, D. J., Noftall, J. C., Sullivan, K. M., & Behm, D. G. (2015). Roller-massager application to the quadriceps and knee-joint range of motion and neuromuscular efficiency during a lunge. *Journal of Sports Rehabilitation*, 24 (4), 332-340.
4. Kelly, S., Beardsley, C., & Button, D. C. (2015). Acute effects of foam rolling on hamstring and quadriceps muscle activation during dynamic stretching. *International Journal of Sports Physical Therapy*, 10 (1), 109-116.
5. Bradbury-Squires, D. J., Noftall, J. C., Sullivan, K. M., Behm, D. G., & Power, K. E. (2015). Roller-massager application to the quadriceps and knee-joint range of motion and neuromuscular efficiency during a lunge. *Journal of Strength and Conditioning Research*, 29 (1), 27-36.
6. Halperin, I., Aboodarda, S. J., Button, D. C., Andersen, L. L., & Behm, D. G. (2014). Roller massager improves range of motion of plantar flexor muscles without subsequent decreases in force parameters. *Journal of Sports Sciences*, 32 (18), 1758-1765.
7. Piper, T. J., Mueller, M. J., & Bryan, J. M. (2018). The effects of foam rolling on performance and injury prevention in athletes and active adults: A systematic review. *International Journal of Sports Physical Therapy*, 13 (5), 748-763.
8. Laffaye, G., Wang, M., Rossi, M. A., & Rognini, G. (2019). Acute effects of foam rolling on fatigue and recovery of the quadriceps muscles in healthy males. *Journal of Sports Sciences*, 37 (6), 665-672.
9. Mohr, A. R., Long, B. C., & Goad, C. L. (2014). Effect of foam rolling and static stretching on passive hip-flexion range of motion. *Journal of Athletic Training*, 49 (5), 635-642.
10. Peacock, C. A., Krein, D. D., Silver, T. A., Sanders, G. J., von Carlowitz, K. P., & Anseth, A. R. (2014). Comparison of foam rolling and static stretching on passive hip-flexion range of motion. *International Journal of Sports Physical Therapy*, 9 (6), 832-838.
11. Macdonald, G. Z., Penney, M. D., Mullaley, M. E., Cuconato, A. L., Drake, C. D., & Behm, D. G. (2013). An acute bout of self-myofascial release increases range of motion without a subsequent decrease in muscle activation or force. *Journal of Athletic Training*, 48 (3), 296-302.
12. Monteiro, E. R., Vigotsky, A. D., Wiewelhove, T., Kellmann, M., Zourdos, M. C., & Nardi, P. S. (2017). Acute effects of different foam rolling volumes on hip range of motion, passive stiffness, and strength-endurance. *Journal of Strength and Conditioning Research*, 31 (4), 888-892.
13. Wiewelhove, T., Döweling, A., Schneider, C., Hottenrott, L., Meyer, T., Kellmann, M., & Ferrauti, A. (2019). A meta-analysis of the effects of foam rolling on performance and recovery. *Journal of Sports Sciences*, 37 (22), 2628-2641.
14. Madoni, S. N., Costa, P. B., Coburn, J. W., Galpin, A. J., & Manfredi, T. G. (2019). The effects of foam rolling on performance and recovery of neuromuscular function in physically active adults. *Journal of Sports Science and Medicine*.
15. Halperin, I., Aboodarda, S. J., Button, D. C., Andersen, L. L., & Behm, D. G. (2014). Roller massager improves range of motion of plantar flexor muscles without subsequent decreases in force parameters. *Journal of Athletic Training*, 49 (3), 319-327.