

## Cryotherapy for Yoga Lovers

During the past centuries, application of cold therapy has been used to treat a wide range of sports injuries and to alleviate muscle pain after a series of strenuous exercises. However, through several research studies, it was discovered that the benefits of different types of cold therapy, such as cryotherapy, are not limited to facilitating recovery after an injury. In fact, it has also been used in improving an individual's body performance and function in terms of flexibility, or 'the ability of a joint or series of joints to move through an unrestricted, pain free range of motion (ROM)' (UC Davis Sports Medicine, 2016). Hence, such effect will not only benefit athletes, but also individuals who engage in activities requiring adequate flexibility, such as yoga.

Though linked with several health benefits including weight reduction and balanced metabolism, yoga is also associated with the risk of musculoskeletal injuries, particularly tendinous lesions, including tears of the supraspinatus, Achilles, and peroneus brevis tendons as well as fibrocartilaginous tears involving the medial meniscus, acetabular labrum, glenoid labrum, and lumbar disk with extrusion. These injuries may be due to chronic repetitive strain injury, an acute event or a combination of both, which are highly attributed to poor flexibility and lack of proper training and instruction. The damage may not be initially felt by the patient, but in the long run, symptoms may gradually become evident and cause debilitating effects (Le Corroller, Vertinsky, Hargunani, Khashoggi, Munk, & Ouellette, 2012).

Hamstring is one of the most common areas prone to injury among individuals who practice yoga. Though it starts with barely noticeable tears, these small injuries can accumulate over time until an overstretching has finally resulted in an injury. Thus, it is important to consider some approaches that will prevent the hamstring from being damaged. These include gentle stretching and warm-up exercises which are known to be more effective if combined with the application of cold therapy. This premise was supported by the results of a study which showed that ROM can be improved through the application of either crushed or wetted ice in combination with proprioceptive neuromuscular facilitation (PNF) stretching (Larsen, Troiano, Ramirez, Miller, & Holcomb, 2015). In addition, cryotherapy also has benefits in improving the plantar flexors extensibility that can contribute to the prevention of Achilles tendonitis, shin splints, plantar fasciitis, muscle strain and joint sprain. In fact, in a study conducted in the year 2013, it was revealed that cryotherapy can significantly improve active dorsiflexion range of motion (Khan, Samsi, & Abdelkader, 2013).

The principle behind cryotherapy as one of the effective methods to improve flexibility is based on the body's reaction to cold temperature. This response is related to the fact that prolonged exposure to cold temperature can initially induce vasoconstriction, but may later on lead to reflex vasodilation to prevent hypoxic damage (Lippincott Williams & Wilkins, 2009). Hence, with the subsequent vasodilation, the temperature of the muscles and deep tissues becomes higher than that of the superficial skin temperature, which may eventually lead to increase blood flow, muscle relaxation, and an improvement in flexibility (Westerlund, 2009). Aside from this, another principle that supports the idea that cryotherapy can help improve flexibility is its effect on increasing an individual's tolerance to stretching maneuvers by reducing neural discharge that can decrease the activation of muscle reflex and pain. Such effects are also known to be related to a reduction in the nerve conduction speed that consequently gives rise to less perception of pain and lower spindle activity (Brasileiro, Faria, & Queiroz, 2007). Lastly, cold modalities such as cryotherapy are also known to improve efficacy of stretching exercises by reducing muscle guarding, enhancing joint mobility, inhibiting muscle spasm and decreasing muscle tension (Khan, Samsi, & Abdelkader, 2013).

## **Bibliography**

**Brasileiro, J., Faria, A., & Queiroz, L. (2007). Influence of local cooling and warming on the flexibility of the hamstring muscles *Brazilian Journal of Physical Therapy*, 53 - 57.**

**Khan, S., Samsi, S., & Abdelkader, S. (2013). Effects of Cryotherapy and Static Stretching Together and Static Stretching Alone For Improving Plantar Flexors Extensibility. *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 51 - 55.**

**Larsen, C. C., Troiano, J. M., Ramirez, R. J., Miller, M., & Holcomb, W. R. (2015). Effects of crushed ice and wetted ice on hamstring flexibility. *The Journal of Strength & Conditioning Research*, 483 - 488.**

**Le Corroller, T., Vertinsky, A. T., Hargunani, R., Khashoggi, K., Munk, P. L., & Ouellette, H. A. (2012). Musculoskeletal Injuries Related to Yoga: Imaging Observations. *American Journal of Roentgenology*, 413 - 418.**

**Lippincott Williams & Wilkins. (2009). *Lippincott's Nursing Procedures*. Philadelphia: Wolters KluwerHealth.**

**UC Davis Sports Medicine. (2016). *Sports Medicine*. Retrieved September 20, 2016, fromUCDavis HealthSystem:[http://www.ucdmc.ucdavis.edu/sportsmedicine/resources/flexibility\\_descriprion.html](http://www.ucdmc.ucdavis.edu/sportsmedicine/resources/flexibility_descriprion.html).**

**Westerlund, T. (2009, March 27). Thermal, Circulatory, and Neuromuscular Responses to Whole Body Cryotherapy. Oulu, Finland.**