

Cryotherapy: An Emerging Weight Management

Obesity is considered to be a serious global health crisis associated with different comorbidities affecting various organ systems as manifested by certain health conditions such as obstructive sleep apnea, malignancies, coronary artery disease and metabolic problems. Hence, wide range of treatment options to manage weight are being utilized to address this issue. These include lifestyle modification, exercise programs and anti-obesity medications (Hamdy, Uwaifo, & Oral, 2016). However, some of these approaches, particularly certain weight-loss products tainted with hidden active ingredients found in prescription drugs, may pose serious health risks such as cardiac problems and stroke (U.S. Food and Drug Administration, 2015). Aside from the risks associated with these treatment options, some of these approaches have poor compliance rates due to the fact that several patients find it difficult to sustain regular exercise and adhere to the prescribed diet regimen.

Cryotherapy, which is defined as the therapeutic use of cold temperature, has been an emerging health trend in weight loss. It uses extremely low temperatures to stimulate skin sensors, activates the central nervous system (CNS) and enhance the release of endorphins which are known to inhibit pain and elevate an individual's mood (US Cryotherapy). There are two mechanisms responsible for achieving weight loss through cryotherapy – shivering and nonshivering thermogenesis. Shivering thermogenesis allows muscles to contract facilitate an increase in energy metabolism. On the other hand, nonshivering thermogenesis involves adaptation to cold exposure to promote fat burning (Patrick, 2016). In 2013, a study conducted by Dr. Rana Gupta, Dr. Philipp Scherer, Dr. Qiong Wang and graduate student Caroline Tao in UT Southwestern Medical Center, revealed that in response to cold temperature, adults have the capability to produce new brown fat cells essential in weight loss and maintenance (University of Texas Southwestern Medical Center, 2013). Compared to white fat cells that store excess calories and are deposited around the abdomen, brown fat acts as a furnace that facilitates burning of calories at a high rate.

In fact, in another study conducted by Swedish researchers, it was found that after exposing their subjects to temperatures between 63 – 66 degrees Fahrenheit and repeatedly submerging their feet in ice cold water for five minutes, brown fat deposits were detected from their subjects' body with a 15-fold increase in its activity. Moreover, brown fat also aids in blood sugar metabolism and reduces insulin resistance (King, 2014). Furthermore, a study conducted in University of Pittsburgh showed that insulin resistance is closely related to thigh adipose tissue distribution or cellulite formation (Goodpaster, Thaete, & Kelley, 2000). Hence, increasing brown fat deposit through exposure to cold temperature, such as cryotherapy, can help prevent these problems.

Cryotherapy also offers a wide range of benefits to achieve weight loss. One of these is that it is considered as an effective and safe weight management option as it helps burn 500 – 800 kcal per session, which can increase exponentially depending on the level of physical activity. In fact, according to a new study, a 15-minute exposure to cold has a metabolic equivalent of one hour of exercise (Berlin, 2014). On the other hand, cryotherapy, also promotes better sleep as it induces a feeling of relaxation, thus, promoting better blood circulation to the brain.

Furthermore, improved sleeping pattern can also be linked to weight loss by boosting the immune system through increased melatonin production and prevention of insulin resistance. Lastly, compared to exercise or workout programs, cryotherapy allows an individual's body to feel re-energized because it stimulate bodily functions without resulting to fatigue and musculoskeletal pain (Cryotherapy Health and Wellness, Inc.).

References:

1. Berlin, J. (2014, February 13). Retrieved July 20, 2016, from *National Geographic*: <http://news.nationalgeographic.com/news/2014/02/140211-shivering-cold-exercise-brown-fat-white-fat-irisin-metabolism-weight-loss/>
2. Cryotherapy Health and Wellness, Inc. (n.d.). Retrieved July 20, 2016, from *Cryotherapy Toronto*: <http://cryotherapytoronto.ca/10-cryotherapy-cold-sauna-weight-loss-benefits-and-facts/>
3. Goodpaster, B., Thaete, L., & Kelley, D. (2000). *Thigh adipose tissue distribution is associated with insulin resistance in obesity and in type 2 diabetes mellitus* 1,2,3. *The American Journal of Clinical Nutrition* , 885 - 892.
4. Hamdy, O., Uwaifo, G., & Oral, E. (2016, July 6). Medscape. Retrieved July 20, 2016, from *Medscape*: <http://emedicine.medscape.com/article/123702-overview>
5. King, G. (2014). *The Diabetes Reset*. New York: Workman Publishing Company, Inc.
6. Patrick, R. P. (2016, February 15). Retrieved July 20, 2016, from *FoundMyFitness*: www.foundmyfitness.com
7. U.S. Food and Drug Administration. (2015, January 5). *FDA Consumer Update*. Retrieved July 20, 2016, from *U.S. Food and Drug Administration*: <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm246742.html>
8. University of Texas Southwestern Medical Center. (2013, September 26). Retrieved July 20, 2016, from *University of Texas Southwestern Medical Center*: <http://www.utsouthwestern.edu/newsroom/news-releases/year-2013/sept/fat-cells-scherer.html>
9. US Cryotherapy. (n.d.). Retrieved July 20, 2016, from *US Cryotherapy*: <http://www.uscryotherapy.com/>