

## Cryotherapy to Defy the Ageing Process

Ageing is an inevitable reality that entails changes in an individual's physical appearance and overall health status. In fact, according to the Global Health Observatory (GHO) data reported by the World Health Organization (WHO), the average life expectancy of the global population in the year 2015 was 71.4 years (World Health Organization, 2016). Moreover, by the year 2030, it is expected that one out of five of the global population will be over 65 years old. Hence, extensive research studies have focused on methods to defy the ageing process, preserve vigor and prolong an individual's lifespan while maintaining a good quality of life in the advancing years (Low, 2013).

To achieve the goal of delaying the onset of diseases or decline in health status related to the ageing process, the National Institute on Ageing (NIA), which is part of the U.S. Federal Government's National Institutes of Health (NIH), exerted its best efforts to increase awareness on various methods that promote longevity and active life expectancy - old age free of disability.

One of the methods that is known to defy ageing is through the use of antioxidants, which act by eliminating the by-products of oxygen and food metabolism called 'free radicals'. However, there is no sufficient evidence to support this claim and still needs further investigation. Aside from this, another method that has anti-ageing effect is caloric restriction. In a pilot study on Comprehensive Assessment of Long-term Effects of Reducing Intake of Energy (CALERIE), it was revealed that overweight adults who decreased their caloric intake by 20 to 30 percent showed a lower fasting insulin levels and core body temperature. These two indicators are linked to improved longevity in animal models. On the other hand, another effect of ageing is the alteration in hormone levels responsible for supporting and maintaining good metabolism, immune function, sexual reproduction, and growth. Hence, some anti-ageing therapies are geared towards regulating the level of hormones that decline in the advancing years. However, some of these off-label use of hormone replacement therapy are associated with several health risks such as endometrial problems and heart diseases in women (National Institute on Ageing, 2016).

With the increasing demand for different anti-ageing possibilities, the emergence of cryotherapy has been thought to benefit a greater population. In fact, some of the methods that utilize the technology behind cryotherapy such as cryofacials and hydrafacials which last for 10 – 25 minutes can help remove dead skin cells to revitalize the skin. Furthermore, cryotherapy is also known to facilitate the healing process of damaged tissues, improve blood circulation and metabolism, increase serotonin levels and boost the function of an individual's immune system (Keenan, 2015). Aside from cryo facials and hydrafacials, cryoneuromodulation is another method known to remove one of the most common signs of ageing, which is wrinkles. Before, this procedure is only done through cryosurgery, which was then associated with possible permanent damage to nerve function. With recent studies and advancement in technology, it was found out that same desired effect can be achieved by using moderate temperature. Hence, leading to the utilization of focused cold therapy (FCT) to reduce dynamic facial wrinkles by inducing temporary muscle relaxation as it blocks the impulse conduction of motor nerves without the use of neurotoxins (Wong & Gausseran, 2014).

compared to other rehabilitation techniques (Hubbard & Denegar, 2004).

Aside from facilitating athletic recovery, patients with sports injuries who required surgery may also benefit from cryotherapy. In a study conducted in Brazil, patients who underwent cryotherapy combined with an exercise protocol immediately after ACL reconstruction, experienced less pain and an improvement in the range of motion of the affected knee. As a result, decreased intake of pain medications, reduced length of hospital stay and an improvement in the quality of life were noted among postoperative patients (Dambros, Martimbianco, Polachini, Lahoz, Chamlian, & Cohen, 2012).

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