



Benefits of Cryotherapy on Mental Health

Whole body cryotherapy (WBC) has been widely used in treating rheumatism and various sports injuries as well as in facilitating athletic recovery. However, WBC can also work beyond relieving pain and inflammation. In fact, studies have shown several noteworthy benefits of WBC on an individual's mental health, particularly among patients who suffer from psychiatric and sleep problems.

Anxiety disorders and major depression are the two most common mental disorders affecting millions of people across the globe. In fact, in the United States alone, the disabling effects of anxiety disorders have significantly brought a major impact to the lives of 40 million adults age 18 years and older (Anxiety and Depression Association of America, 2016). Furthermore, in the year 2014, it was also estimated that there were 15.7 million adults, which equates to 6.7 % of the total adult population in the U.S., who suffered at least one major depressive episode in the past year (National Institute of Mental Health, 2015). Medical management for both anxiety disorders and depression includes cognitive behavioral therapy (CBT), a variety of medications and other complementary and alternative remedies. However, although treatment options for anxiety disorders are widely available, only a few receive prompt and adequate intervention due to several factors such as a low perceived need, desire to handle the problem by oneself, self-stigma and label avoidance (Andrade, et al., 2013).

With the emergence of cryotherapy as an adjunct treatment for various mental disorders such as those mentioned above, we can expect an improvement in both somatic and psychological aspects of general well-being and eventually, in an individual's quality of life. In a preliminary report presented by a Polish research team, it was revealed that WBC induced relaxation, mood elevation, memory enhancement, an improvement in vigor, a significant decrease in tension and fatigue and a boost in energy levels (Rymaszewska, Bialy, Zagrobelny, & Kiejna, 2000). In addition, this premise was supported by the results of another study which showed that 15 sessions of cyclic short-term WBC (120 – 180 seconds per session) with temperature ranging from -110 to -160 degrees Celsius, can actually reduce both depressive and anxiety symptoms and improve life satisfaction (Rymaszewska, Ramsey, Chładzińska-Kiejna, & Kiejna, 2007). Such benefits are said to be related to the influence of WBC on hypothalamic-pituitary axis (HPA) and monoamine regulation, increased β -endorphin levels, hippocampal brain-derived neurotrophic factor (BDNF) normalization, and improved perceptions of self efficacy (Rymaszewska, Ramsey, & Chładzińska-Kiejna, 2008).

Through the regulation of the HPA, the body becomes capable to initiate an adaptive response in times of stress, which includes behavioral changes such as increased awareness, improved cognition, euphoria, and enhanced analgesia (Smith & Vale, 2006). On the other hand, the normalization of BDNF acts as an essential regulator of cellular processes that improves cognition, complex behaviors, learning and memory. Therefore, any intervention, such as WBC, that alters BDNF pathway can potentially exert notable benefits on various neurological and psychiatric conditions (Lu, Naggapan, & Lu, 2014).

Another problem that may arise due to anxiety and depression is a condition called insomnia or the difficulty of falling and staying asleep at night. However, there are also other factors that may

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cause insomnia. These include stress, poor sleep habits and intake of medications and food containing substances, such as caffeine and nicotine, that can interfere with sleep (Mayo Clinic, 2014). Monoamine neurotransmitters, particularly serotonin derived from tryptophan, play a major role in the regulation of sleep-wake cycle. Hence, an imbalance in these neurotransmitters can result in the disruption of a good sleep (Hurd, 2011). As shown in the study conducted by Rymaszewska, Ramsey, & Chładzińska-Kiejna, 2008, WBC can help promote sleep among patients with insomnia through the regulation of monoamine neurotransmitters.

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