

°CRYO SCIENCE



THE SCIENCE OF CRYOGENICS



Whole Body Cryotherapy Main Targets

Advantage of Extreme Cold ❄️

Introduction

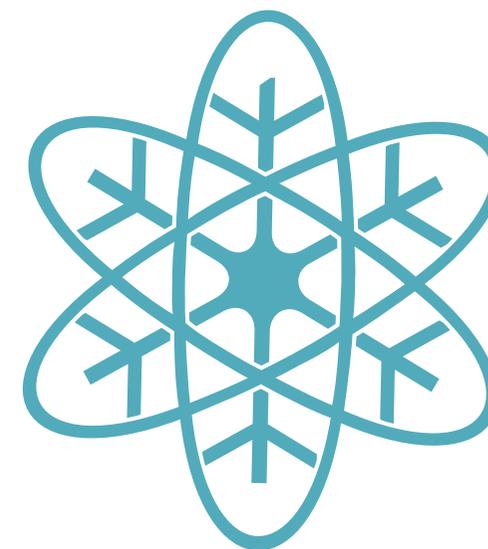
Whole Body Cryotherapy (WBC) is a short-term passive physical therapy that has a systemic effect. The range of temperatures used in this kind of treatment is -100°C to -160°C and takes place in Cryochamber specialized devices for a safe and sufficient procedure.

WBC started in Japan in the eighties and then gained its popularity in Germany and Poland. Plenty of basic research was done by Polish and German scientists, which resulted in the extension of initial indications (Rheumatism) to various inflammatory conditions and sport medicine applications. The main physiological response to extreme cold exposure is decreasing the skin's temperature, changing the blood flow conditions, attenuating inflammatory response and formation of Oedema after tissue injury. Thirty years of experience in WBC applications in Poland, Germany and Scandinavian countries (currently about 150 devices are available) led physicians and scientists to thoroughly explain their physiological findings based on factual data and results related to extreme cold temperatures.

Therapeutic and performance enhancing effects of exposing the whole body to extreme cold stimulus has been compared to local Cryotherapy results, showing an advantage is using the WBC due to better systemic nervous reflex reactions.

A special part of the research studies the role of NO (Nitric Oxide) in the activity of the human body in connection with WBC. Studies are still ongoing in the field of athlete recovery. Basing on studies performed by different scientific and medical centers the main targets for WBC can correspond to the following:

- Painful joints - trauma and degenerative
- Relief from symptoms of chronic fatigue due to intensive sports training
- Immunostimulation
- Skin disorders



WHOLE BODY CRYOTHERAPY - PAINFUL JOINTS

Painful joints are the most important problem in the course of trauma as well as in degenerative disease cases. It can be caused by defects in the cartilage surface of the joint and cartilage tissue is the main target for the WBC application. Factors responsible for joint pain are:

- Raised pressure on the joint surface
- Inflammation of the synovial membrane (layer of the joint capsule)
- Joint effusion that allows stretching of the capsule

These factors can lead to wear phenomena due to the decreased water content in the cartilage tissue. Other effects are the reduction in elasticity, layer thinning, poor nutrient supply of the joint surface and some influence of hormonal attribution in this process. All these factors cause impaired joint function followed by poor posture, inadequate joint movement and pain.

Long time experience in application of the WBC in relieving joint pain syndromes showed a very high efficiency rate in allowing patients to return to their normally accepted level of activity.

Extremely low temperature influences perfusion around the joint and improves nutrient and oxygen supply to the cartilage cells. Studies and clinical experience have shown that a good therapeutic outcome can be achieved after being exposed to at least 10 sessions in the Cryochamber. However, starting with 20 sessions and repetition of therapy after 6 months appeared to be the most effective recommendation in treating joint pain.

Studies showed the important role that the WBC has on decreasing joint pain by regulating muscle tone, elimination of disturbances in proprioception brings improvement in gait mechanics coordination and reducing the blockades of diseased joints. However it is necessary to remember that the WBC does not represent a complete substitute for other proven therapies and always should be treated as a single component of the therapeutic program. From this comes the importance of mobilization therapy resulting of cold application.

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WHOLE BODY CRYOTHERAPY - RELIEF FROM CHRONIC FATIGUE SYMPTOMS DUE TO INTENSIVE TRAINING

Cumulative fatigue over extended periods of training or competitive functions is a very common problem in sports.

Adequate recovery between training and competition events is crucial to maintain good health for athletes. A very important factor for proper recovery in relation to improving sleep patterns, optimizing the parasympathetic system and improving recovery after muscles injury appeared to be the physiological response that occur due to extreme low temperature exposure.

Exercise-related stress and injuries are often related to environmental conditions where a special role is reserved for proper function of the thermoregulation mechanism of the human body.

Disruption of proper function of the muscles is due to fatigue syndrome that creates pain, disruption of central activity level, sleep disorders and orthostatic regulatory disruption. Application of the WBC is a new way to prepare athletes for competition and improve their body's recovery capacity.

Intensive physical exercise is characterized by an increased oxygen consumption that leads to augmented free radical production. Mechanism of oxygenated free radical production is crucial in muscle recovery after exercise because oxidation can lead to cellular dysfunction and inflammatory disorders.

In numerous studies authors managed to show significant increases of total plasma antioxidant capacity after the application of the WBC. Other benefits of the

physiological reaction muscle stimulation by the low temperature exposure are analgesic, anti-swelling and antalgic as well as improving circulation in muscle bellies leading to better recovery from muscle trauma or fatigue syndrome.

An extremely interesting issue appeared to be the influence of low temperature exposure to the neuromuscular performance. Zimmer and Fricke observed that peak torque of the knee extensor and flexor muscles increased after a single session of the WBC in healthy subjects. These results prove that the WBC can play an integral role in preparing for better muscle condition prior to competition.

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WHOLE BODY CRYOTHERAPY - TENDOPATHIES

Tendopathies, also known as degenerative diseases of the tendon - bone interface create special problem in professional and amateur sportsmanship. The most common enthesopathies are known as tennis elbow, golf elbow and plantar fasciitis. This kind of degenerative connective tissue disorder is promoted by chronic overuse of the extremity due to the repetitive movement in certain sport disciplines. The main problem with this disease is the experiencing of severe pain accompanied by movement.

Tendopathies as chronic degenerative connective tissue status respond very well to the treatment with the WBC application; after a series of 10 - 15 sessions usually total pain relief is achieved and the patient can now consider starting a proper rehabilitation program, as a second treatment phase.

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WHOLE BODY CRYOTHERAPY - SKIN DISORDERS

Good skin condition of skin is a basic criteria that qualifies patients to use the whole body Cryotherapy program, however certain pathologies connected with inflammatory skin findings (like Neurodermatitis, Psoriasis and Tinnitus) appeared to be ideal cases for the WBC. The benefits from using extremely low temperatures in those disease cases come not only from the topic activity but also from mobilizing the immune system.

Due to the excellent results obtained using treatment with the WBC, practice encompassed using this method in cosmetology. Studies showed that exposure to low temperatures in Cryochambers leads to increased collagen production and influences the transformation of different types of collagen fibers improving elasticity of skin and its connective tissue.

The results of healthier skin are visible with factual scientific data from thousands of treated patients including celebrities who have agreed to participate in the program with great enthusiasm. The WBC program helped to reduce cellulite, skin blemishes and signs of aging.

Sessions in the Cryochamber work hand in hand with accelerating the patient's metabolism, thus post session exercises are very helpful in attaining weight management.

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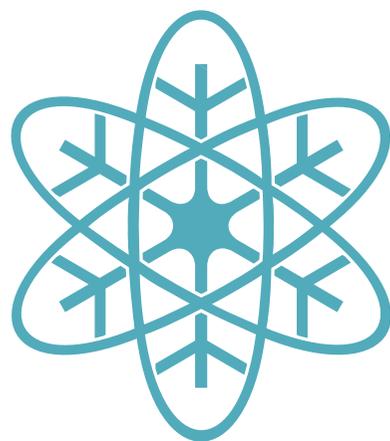
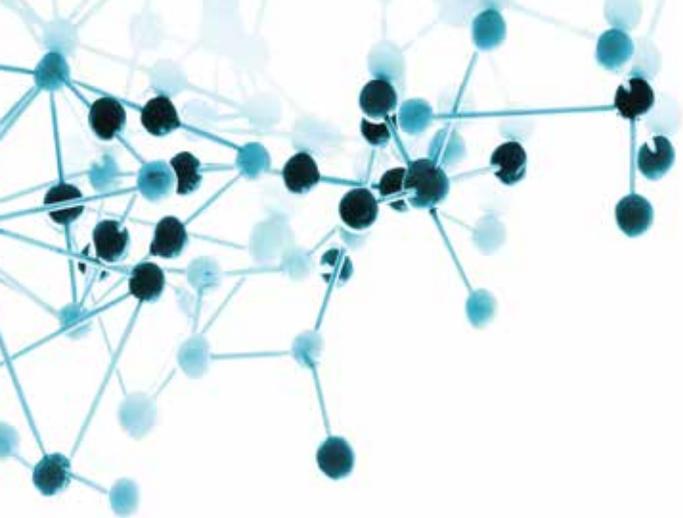






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