



**Consensus Declaration**  
**on**  
**Whole Body Cryotherapy**  
**(WBCT)**

BAD VÖSLAU, STATE OF LOWER AUSTRIA, AUSTRIA  
FEBRUARY 2006

## CONSENSUS DECLARATION ON WHOLE BODY CRYOTHERAPY

Bad Vöslau, State of Lower Austria, Austria  
February 2006

A consensus conference took place at the Second Austrian Symposium on WBCT on February 17-18, 2006 at the Bad Vöslau Health Resort (Kurzentrums Bad Vöslau).

### Participants

Prof. Dr. Joch, W.	Münster (D)
Dr. Jonas, L.	Bad Häring (A)
Dr. Nöcker, K.	Brandis (D)
Prof. Dr. Papenfuss, W.	Pinnow/Schwerin (D)
Dr. Samborski, W.	Poznan (PI)
Dr. Savalli, L.	Capbreton (F)
Dr. Schwenke, G.	Treuenbrietzen (D)
Dr. Smuk, L.	Celadna (CZ)
Dr. Sobieska, M.	Poznan (PI)
Prof. Dr. Teuber, J.	Bayreuth (D)
Prof. Dr. Ückert, S.	Dortmund (D)
Prof. Dr. Werner, J.	Dresden (D)

The participants feel it is appropriate to agree a joint declaration on the use of WBCT. This is being done both because there is sufficient evidence of the therapeutic benefit of this treatment method and because we recognize the need for additional research into the cause-and-effect relationships and the indications.

### Definition

WBCT is a short-term passive physical therapy that has a systemic effect. Typically, therapeutically effective temperatures in the range of -100°C to -150°C are used for this therapy. It works according to the “stimulus – reaction - adaptation” principle. Whole body cryotherapy applications are used both therapeutically and to optimize performance. They take place in cryochambers. WBCT is supervised by a physician.

### Principles

T. YAMAUCHI first used WBCT to treat rheumatoid arthritis approximately 25 years ago. In the interim it has become widespread in Europe in particular and the range of indications has increased greatly. WBCT is now being used successfully in acute clinical, rehabilitative, out-patient and health resort settings, as well as in sport.

Developed based on physiological findings about the effect of the short-term exposure to cold on the human body, knowledge of the science behind WBCT has increased, especially in the last 10 years.

The starting point for the therapeutic/performance-enhancing effect is exposing the unprotected surface of the body to a short-term extreme cold stimulus. Taking into account intra- and interindividual fluctuations, the body surface temperature falls while being exposed due to temporary vasoconstriction and simultaneous strong heat release via convection (cold ambient air) and infrared radiation to values of around +5°C. In contrast to local cold applications, systemic nervous reflex reactions result that can be explained by confirmed physiological findings related to neural, thermal, muscular and cardiovascular processes. The following have been discussed:

- Desensitization/deactivation of nociceptors
- Blockade in the C-fiber system caused by conduction dominance in A $\delta$  fibers
- Centrally regulated interactions between thermoreception, nociception and anti-inflammatory neuronal and neuroendocrine processes.
- Stimulation of  $\alpha$ - and suppression of  $\gamma$ -motoneuronal activity due to their general reciprocal reaction pattern to cold stimuli
- Temporary increase in blood supply to the musculature and improvement of its metabolism
- Economization effects in the cardiovascular system and in the energy balance during endurance activities
- Regulatory influence on the central activity level depending on a sympatheticotonic or parasympathicotonic baseline situation (probably via the transmission of signals from cold stimuli into spinal autonomic reflex arcs and into the reticular formation) with improvement of cortical functions, such as associative and coordination abilities.

### **Effect elements**

1. Pain relief/pain eradication
2. Anti-inflammatory effect
3. Effect on the skeletal musculature (tone regulation, temporary increase in blood supply, improvement in metabolism and modification of neuronal activation)
4. Improvement in joint function
5. Regulation of the central activity level, psychophysical performance stimulation and enhancement of well-being
6. Economization in the cardiovascular system and in the energy balance.
7. Optimization of thermoregulation

### **Indications**

1. Inflammatory/rheumatic disorders of the joints and the spine
2. Degenerative joint and spine disorders
3. Soft-tissue rheumatic disorders
4. Chronic pain
5. Disturbed regulation of muscle tone in the case of infantile cerebral paralysis, multiple sclerosis and muscular rigidity
6. Psoriasis with or without joint involvement
7. Neurodermatitis
8. Contusions, sprains, status post surgical procedures on joints and the spine, injuries to the musculoskeletal system
9. Performance optimization in sports and during medical rehabilitation

### **Positive treatment outcomes have been observed for**

- nonorganic and pain-induced chronic sleep disorders
- primary hypotensive circulatory regulation disturbances
- sympathicotonic and parasympathicotonic reaction states
- general psychophysical decrease in vitality
- asthma
- disorders of movement coordination (in the case of abnormal proprioception)
- chronic inflammatory bowel diseases
- restless leg syndrome and periodic leg movements while asleep.

## Whole Body Cryotherapy -110°C

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WBCT is generally to constitute one component of a treatment plan. If indicated, it should be combined with active/activating somatically oriented treatment elements (movement therapy) and/or supported with behavioral therapy. When supplementing WBCT with localized cold applications, short-term cold-air therapy is advised. When using WBCT for therapeutic purposes very demanding physical activities should not take place immediately before or after the exposure. If using serial cold applications, avoid therapeutic heat applications.

The application of WBCT can contribute to less use of medication, particularly in chronic pain and chronic joint disorders.

### **Absolute contraindications**

1. Untreated high blood pressure
2. Heart attack within the past six months
3. Decompensated diseases of the cardiovascular and respiratory system
4. Unstable angina
5. Pacemaker
6. Peripheral artery occlusive disease (Fontaine stages III and IV)
7. History of deep-vein thrombosis
8. Acute febrile diseases of the respiratory tract
9. Acute renal and urinary disorders
10. Severe anemia
11. Signs or symptoms of cold allergy
12. Severe wasting diseases
13. Seizure disorders
14. Large-area bacterial and viral skin infections, wound-healing problems
15. Alcohol and drug influence

### **Relative contraindications**

- |                              |   |
|------------------------------|---|
| 1. Cardiac arrhythmias       | 7. Pregnancy, starting in the 4th month |
| 2. Heart valve defects       | 8. Vasculitis                           |
| 3. Status post heart surgery | 9. Claustrophobia                       |
| 4. Ischemic heart disease    | 10. Hypothyroidism                      |
| 5. Raynaud's syndrome        | 11. Hyperhidrosis                       |
| 6. Polyneuropathies          |   |

### **Age limits**

WBCT can be used from late infancy onwards (age 4-6) (with cold chamber temperatures of -100°C). Make sure to adjust the therapy frequency and time in the chamber (maximum two minutes).

The upper age limit is determined by the general physical condition.

### **Side effects**

WBCT is tolerated very well and is characterized by high compliance. With strict adherence to the indications, contraindications and instructions for use, side effects are extremely rare. The following may occur:

- local 1st and 2nd degree frostbite
- headaches or exacerbation of existing pain
- nonphysiological increase in arterial blood pressure
- signs and symptoms of cold allergy.

### **Treatment procedure**

The treating physician determines if WBCT is indicated, ruling out any contraindications. WBCT usually takes place in small groups (depending on the size of the chamber, 2-5 persons). Patients wear conventional bathing suits, protection for the ends of the extremities, a face mask, and sturdy footwear. The skin and hair need to be dry. Blood pressure should not be higher than 160/100 mm Hg prior to cold exposure. People with impaired mobility, psychiatric patients and children need to be accompanied by experienced persons when they go into the cryochamber.

WBCT is applied 1-3 times a day at intervals of at least three hours. The exposure time is usually three minutes, or for performance enhancement in sports, around four minutes. The number of exposures in an uninterrupted (if possible) treatment cycle is geared toward the type, severity and stage of the disease. The number of exposures in one treatment cycle should not be less than 10. In the case of whole body cryotherapy for performance enhancement, the exposures are integrated into the individual training/recovery program.

## Whole Body Cryotherapy -110°C

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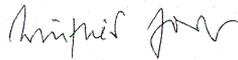
The original of this consensus declaration has been filed at the Bad Vöslau Health Resort. The conference participants have each been given three copies.

Cryotherapy centers can request copies of the consensus declaration from the Bad Vöslau Health Resort.

Signature page for the Bad Vöslau Consensus Declaration on Whole Body Cryotherapy

Signatories:

Joch, W.



Jonas, L.



Nöcker, K.



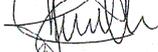
Papenfuss, W.



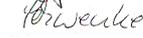
Samborski, W.



Savalli, L.



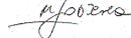
Schwenke, G.



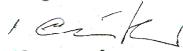
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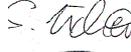
Sobieska, M.



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