



**ATHLETIC MEDICINE
& PERFORMANCE**

**KEEPING
ATHLETES
SAFE
HEALTHY
AND DOING
WHAT THEY
LOVE**

THRU

SPORTS MEDICINE

EDUCATION

OUTREACH

**PERFORMANCE
TRAINING**

Cryotherapy /Cryostimulation

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Definitions & Etc

Cryotherapy/Cyrostimulation

Japan 1970 for RA

Goal to decrease intermuscular temperature
vs reducing blood flow

maxi drop in core temperature 50-60 min post WBC

Whole Body Cryotherapy (WBC)

Nitrogen cooled air in chamber

Seems important head is exposed (ANA response)

ideal -110 C (studies of -110 to -150 C)

@ 110 C reduces disease activity in Inflam. Arthritis

Vestibule chamber -60C

duration 2-4 min (stepped) (2.5-3 min)

5-20 (38) daily exposures (1 to reduce oxidative stress)

Partial Body Cryotherapy (PBC)– head outside

Cryosaunas/Cryocabins (-143 C to -171 C)

Direct exposure to nitrogen gas

Duration at least 2.5 min

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Contraindications

- Cold Hypersensitivity
- Heart Conditions (may be fine with supervised WBC)
 - Decreases Heart Rate
 - Significant increase in BP post exposure esp. diastolic
- Circulatory Pathology including cold intolerance
- Hypothyroidism
- Acute respiratory system disorders
- Sympathetic nervous system pathologies
- Wounds
- Claustrophobia?

Promoted Benefits

- Decreased muscle soreness
- Increased energy
- Improved performance
- Train longer & harder
- Faster recovery from intense workouts
- Decreased inflammation & swelling
- Increased circulation
- *Immediate elimination or decreased pain*
- Increased movement & agility
- Better sleep
- Beauty benefits as well

taken directly from www.n2cryo.com

Promoted Benefits

- Decrease pain
- Reduce swelling and inflammation
- Accelerate muscle recovery time
- Boost performance
- Assist in post-injury recovery
- Increase energy and endorphin levels
- Increase collagen production
- Reverse signs of aging
- Burn calories
- Help treat skin conditions
- Strengthen the immune system

Taken directly from
<https://pharm406.com/cryotherapy>

Benefits Supported by Research

Summary of evidence for accelerated recovery following injury & exercise

(Kwiecien, S.Y., McHugh, M.P. (2021). The cold truth: the role of cryotherapy in the treatment of injury and recovery from exercise. European Journal of Applied Physiology.)

		<u>Ice</u>	<u>WBC</u>	<u>CWI</u>
Injury		=	?	?
Soreness	-	+	+	
Strength		-	-	-
Functional Recovery		?	-/+	-/+
Inflammation		?	-/+	-
Metabolism		=	?	Indirect evidence

= equivocal ? No data

+ direct evidence to support

-no direct evidence to support

- Some research to support use as prevention strategy.

(Lombardi et al article)

- WBC & PBC are not FDA approved
- Only PBC is available in Billings
- Cost
- Research has been small studies; temperatures & duration not consistent
- A lot we do not know
- (& burr)

Final Thoughts

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References

Bouzigon, R., Grappe, F., Ravier, G., Dugue, B. (2016). Whole – and partial-body cryostimulation/cryotherapy: Current technologies and practical applications. *Journal of Thermal Biology*. 61: 67-81.

Kwiecien, S.Y., McHugh, M.P. (2021). The cold truth: the role of cryotherapy in the treatment of injury and recovery from exercise. *European Journal of Applied Physiology*.

Lombardi, G., Ziemann, E., Banfi, G. (2017). Whole-body cryotherapy in athletics: From therapy to stimulation. An updated review of the literature. *Frontiers in Physiology*. Vol 8. Article 258.

Louis, J., Theurot, D., Filliard, J-R., Volondat, M., Dugue, B., Dupuy, O. (2020). The use of whole-body cryotherapy: time-and dose-response investigation on circulating blood catecholamines and heart rate variability. *European Journal of Applied Physiology*. 120:1733-1743.

References

Partridge, E.M., Cooke, J., McKune, A., Pyne, D.B., (2019). Whole-body cryotherapy: Potential to enhance athlete preparation for competition? Frontiers in Physiology. Vol . Article 1007.

Romanowski, M.W., Straburzynska-Lupa, A. (2020). Is whole-body cryotherapy a beneficial supplement to exercise therapy for patients with ankylosing spondylitis? Journal of Back and Musculoskeletal Rehabilitation. 33: 185-192.

Sanders, M. (2016). Whole-Body Cryotherapy: What is cooler than being cool. Massage Magazine.

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Thank You!

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