

Deliberate Cold Exposure: Benefits

- **Increased metabolic rate** (350% after 1 hour in 57.2° F)¹
- **Increased dopamine** (250% after 1 hour in 57.2° F)¹
- Increase the body's ability to generate heat when exposed to cold²
- Increase **sports performance**: increased work volume in resistance training via palm cooling (40% for bench press versus 13% with no cooling; 144% for pull-ups versus 5% with no cooling³)
- **Mental resilience** – maintaining mental clarity in the setting of stress (from cold exposure) enables you to deal with stress in other situations
- Enhanced **immunity** (30 seconds of cold shower for 30 days reduced sick-related absence from work by 29%⁴)
- Anecdotal or subjective: improved mood, decreased depression, increased attention, focus, energy, happiness

Deliberate Cold Exposure: Methods

- **Form**: immersion up to neck in cold water is most efficient (and most studied), followed by cold shower, followed by going outside in cold weather.
- **Temperature** – no specific temperature, it should be based on your tolerance. It should be uncomfortably cold. 'Cold shock response' is seen **below 60° F**, so you're not likely to get any benefit (except maybe mental) with water above 60° F. Swimming in water below 41° F is considered 'ice swimming.'
- **Frequency – 2 to 4 times per week**
- **Duration** – 20 to 60 seconds required to get past the initial shock. If starting out, do as short a time as you need to, then build up gradually to sessions of **1 to 5 minutes**
- **Dosing – 11 minutes per week**
- **Timing**: avoid late in the day if getting to sleep is a concern; **avoid within 4 hours after exercise** (may impair adaptation).
- **Mental resilience**: need to vary parameters so you don't bottom out on time and temperature.

Deliberate Cold Exposure: Measurement

Lead measure (this is where you measure something you can control – the input):

Minutes (shoot for 11 minutes over the course of the week)

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
Week 1								
Week 2								
Week 3								
Week 4								

Lag measure -- This is a desired outcome or output.

It could be anything related to the practice of cold exposure. If you want to track a lab value, talk to your doctor about what might make sense, but there are plenty of low-cost or no-cost metrics you could count. Here are some ideas:

Metabolic:

Body composition – change in percentage of fat or lean muscle (DXA scan or InBody)

Weight – just get on the scale

Mental:

Self-report mood – rate how you feel on a scale of 1-10

Athletic performance:

Could be anything in your sport but with resistance training (which was studied in the palm cooling article), *1 RM* (1 repetition maximum, the greatest amount of weight you can lift once) is a very objective measure

Sleep:

Track your *hours*, a self-assessment of *quality*, self-track number of hours or use a sleep tracking device

Further reading/listening

[Huberman Lab podcast](#) on this subject

- Good primer on physiologic responses and protocols

Dr. Susanna Sjøberg's book [Winter Swimming: The Nordic Way Towards a Healthier and Happier Life](#)

- Good primer on the scientific basis for benefits of cold exposure

Wim Hof's book [The Wim Hof Method: Activate Your Full Human Potential](#)

- The three pillars of the Wim Hof Method are cold exposure, breathing and mindset. See chapters on cold exposure for his take on it and his spiritual connection to Nature

Joe Simpson's [Touching the Void: The True Story of One Man's Miraculous Survival](#)

- Simpson suffers a climbing accident in Peru and lives to tell the tale

Leo Tolstoy's [Master and Man](#)

- Short story about two men lost in the snow on a sleigh

References

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2. Sjøberg S, Löfgren J, Philipsen FE, et al. Altered brown fat thermoregulation and enhanced cold-induced thermogenesis in young, healthy, winter-swimming men. *Cell Rep Med*. Oct 19 2021;2(10):100408. doi:10.1016/j.xcrm.2021.100408
3. Grahn DA, Cao VH, Nguyen CM, Liu MT, Heller HC. Work volume and strength training responses to resistive exercise improve with periodic heat extraction from the palm. *J Strength Cond Res*. Sep 2012;26(9):2558-69. doi:10.1519/JSC.0b013e31823f8c1a
4. Buijze GA, Sieravelt IN, van der Heijden BC, Dijkgraaf MG, Frings-Dresen MH. The Effect of Cold Showering on Health and Work: A Randomized Controlled Trial. *PLoS One*. 2016;11(9):e0161749. doi:10.1371/journal.pone.0161749