CryoProsUnited

Hot Trend: Tapping into the Power of Cold

Not All Cold is Created Equal, Though

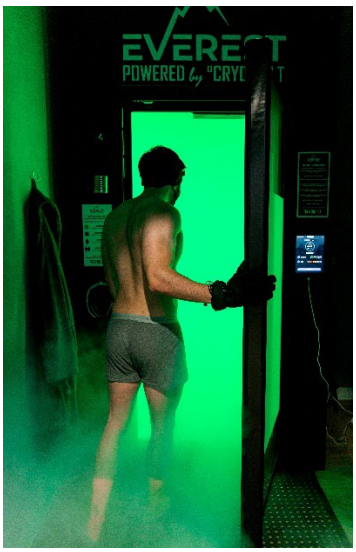
Amidst the increasing trend towards holistic powered by nature wellness and preventing illness rather than medicating the way out of it, cold showers, wild swimming in chilly water, ice baths, and whole-body cryotherapy using brief exposures to extremely cold air are quite quickly becoming the most widely discussed topics in the world of health, wellbeing, and fitness.

They are the most sought out experiences, too, among pro athletes, workout enthusiasts, people suffering from painful medical conditions or recovering from injuries, and adrenaline junkies alike.

Brought into the limelight by individuals such as "the Iceman" Wim Hof, withstanding cold can be seen as an exercise of mental resilience and determination, but it can also be a surprisingly powerful way out of chronic pain, sleep, and mood disorders.

It just needs to be understood that all cold is not created equal. The bodily reactions depend on the medium (water, ice, or air), its temperature, and length of immersion. So do the benefits that can be expected.

Let us look at these differences, so that you can pick the right challenge for the purpose.



What cold does to the body

The knowledge of cold benefits has been accumulating for more than 5,000 years - the oldest medical text that refers to use of cold as a therapy was written in about 3500 BC. Medical schools in ancient Greece, Persia, and Rome all propagated use of cold remedies for treating a range of diseases and conditions, including relief of physical suffering, and the process was well described by Hippocrates as early as 400 BC.

The benefits are rooted in the mechanism of thermoregulation - the body's ability to keep its body temperature within certain boundaries, despite the changes in the surrounding temperatures that affect the skin.

When the ambient environment is cold, peripheral blood vessels constrict to preserve the body's heat. The larger the difference between the skin and the outside temperatures in touch with it, the more pronounced the reaction and the faster the skin temperature drops to protect the core.

In addition, the body seeks ways to stay warm. One of them is burning brown fat for heat, another - making the skeletal muscles shiver.

How cold is cold enough

When it comes to the reaction of the body to cold, perception of the danger is everything. The more extreme the environment, the sooner the body realizes that it might be in jeopardy and ensures that the organs that are most important for survival are getting enough blood to keep it going in these altered conditions.

In addition, when the body goes into a "shock" mode, it registers that it might need a bit of extra help to ward off other potential threats, so it generates more white blood cells. Their job is to fight infections, bacteria, and viruses.

One thing needs to be understood, though. It is the rapid skin temperature drop that determines the severity of the reaction – the faster the cooling, the more pronounced and systemic it is, and the more benefits can be expected.

For this reason, IF you are seeking health benefits, not just a physical challenge and adrenaline rush, your best bet will be colder for shorter rather than less cold for longer. It means, standing in a whole body cryochamber filled with -110° C air for 3 minutes will trigger a more pronounced protective reaction than sitting in icy water at about 4° C for more than twice as long, while the feeling will be more extreme in the ice bath. It is because the heat

transfer coefficient of water is 24 times higher than that of air and even more when ice is involved.

Is ice plunge for you?

It depends.

The answer is "yes" if you are generally healthy and are doing it for experience or to build physical and psychological resilience. The cold will strengthen your immune system and improve the ability to cope with stress.

But there is a better – faster and less painful - way if your goal is performance boost, speedier recovery, or chronic pain relief.

A quick immersion in an ice bath only involves topical cooling. It does cause brief vasoconstriction but does NOT trigger the beneficial mechanisms of protecting the core. For that, you must endure the cold for much longer. A typical ice bath for therapeutic purposes lasts for 10 to 20 minutes.

For example, in a research project carried out between the University of Miami School of Medicine and the Thrombosis Research Institute for the British Heart Foundation, patients were required to gradually extend their cold baths from 5 to 20 minutes over a 12-week period. Only then, in 100% of cases the blood pressure, pulse and cholesterol went down, oxygen capacity in the blood increased, and white blood cell count went up. Weight loss was also registered.

So, if you want to improve performance or health yet are not willing to endure regular ice baths for at least 10 minutes per procedure for several straight months, you shall give whole body cryotherapy chamber a try, instead.

The unique features of the modern whole-body cryotherapy

Sometimes, you will hear people say that a cryochamber is an "ice bath on steroids." This statement comes from trying to explain how much faster and more comfortable whole-body cryotherapy is compared to its much older cousin - ice bath. Yet the process initiated by the two it is NOT THE SAME. In fact, it is quite the opposite!

So, WHAT ARE THE DIFFERENT EFFECTS of a cryochamber vs an ice bath?

The body's reaction to extreme cold is radically different from its reaction to "normal cold", like being submerged in an ice-cold water which is part of the environment around us in many places on Earth.

When gradually cooling in an ice bath, the body's response is trying to deal with the discomfort, not a death threat. It is warming blood in the core and sending it to the peripherals to warm the skin surface, while the body is struggling with actual, unrelenting, penetrating physical cold, not just signals from the cold sensors on the skin.

Over the time of 10 or more-minute submersion, there is not enough heat generated to warm the skin, and the cold begins to "lurk" deeper into the body, towards its core. The muscles start to congeal. Blood circulation in them slows.

On the contrary, the extreme, not natural for survival, temperatures in a cryochamber create a perceived death threat, not just a discomfort. Skin temperature in the below -110° C environment drops by 15 or more degrees in just seconds (in an ice bath, it cannot happen, as the temperature of the ice-filled water is about 4° C at its lowest). The rapid cooling of the skin immediately initiates a process of protecting the core, even if at a cost of sacrificing a peripheral.
We all know of cases when people have survived in truly extreme conditions, being buried under snow, or injured high in the mountains, although they may have lost a limb due to freezing. In these circumstances, instead of sending warm blood to the skin, the body does just the opposite - withdraws blood from it to maintain the core temperature intact, since it is crucial for survival.

This reaction results in a better blood supply to all internal organs, thus supporting all vital functions. At the same time, the treatment time is too short to harm the vasoconstricted peripheral tissue. Just a couple of minutes later, once the cryosession is over and the perceived threat to survival is gone, blood gets flushed back to all corners of the body. The enhanced blood flow results in feeling warm and energized, and the body celebrates the survival by releasing happiness hormones endorphins and serotonin.

Since many users of cryotherapy are in sports and physical performance, it is important to also mention that cryochamber does not impact the user's mobility. During the 10-20 minutes of ice bathing, tissue cools quite deep, and the cold muscles temporarily lose capacity. As muscle tissue needs time to return to normal, the body must rest after an ice bath; so, regardless of the time of day of this cold treatment, the athlete cannot get back to practice for hours. In contrast, the extreme cold in the cryochamber does not penetrate muscle tissue, it only cools the very surface of the skin. Since the drop of the skin temperature is rapid, it creates a powerful ILLUSION that the body freezes and triggers the discussed earlier rapid response, but only minutes after exiting the extremely cold environment an athlete can continue to work out or perform.

The choice is yours

To conclude, it is important to note that BOTH modalities, ice baths and whole-body cryotherapy using freezing air, are regarded as beneficial and safe with a minimal chance of developing adverse events.

While cold water immersion has been used for much longer, maybe more easily accessible, as well as cheaper, whole-body cryotherapy chambers are rapidly taking its place around the world, as they allow for shorter exposure, staying dry, and much more comfortable overall experience. Also, they have a broader range of applications – not only athletic recovery, but also medical purposes, vitality, and beauty.

There is no doubt that cold can be a powerful tool to achieve better performance, health, and wellness. The choice of how to reap the benefits is yours.