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# Cold Exposure

## What & How / Showering & Bathing

As many things which pop up (again) in our century, cold therapy is not a new invention. On the contrary, it is among man's earliest medical treatments. The Edwin Smith Papyrus (3500 BC), the most ancient medical text, repeatedly mentioned cold therapy<sup>1</sup> which is by sure an interesting note.

A special form of cold therapy, which we will discuss in this text, winter/cold bathing, also has a long tradition in many countries. Especially in the northern latitudes around Finland and Russia, cold bathing, especially in the ice hole, is a respected and popular activity. Here, bathing in cold water is often combined with a trip to the sauna. Especially on January 19, the baptism of Jesus, it is the custom of the Russians to venture into the ice-cold water.

In Germany, too, bathing in ice water has been attracting attention for a long time. Goethe, for example, describes how he chopped up the ice in the Ilm River to take a bath in it. In the meantime, entire associations have come together in Germany, which find valuable benefits for physical and mental health in ice bathing. And so do we.

The numerous benefits of cold therapy remain relatively hidden and untapped and we want to do our part to change that and let more people know about it.

In the following we introduce you what Cold Exposure, how we call this practice, is, how you can benefit from it and how you can build it up and integrate it into your life. Hopefully, this will give you an insight into how you can leverage cold exposure to optimize your health and performance.

### **WHAT IS COLD EXPOSURE / ICE BATHING**

Cold Exposure describes the intentional exposure of the body to cold, a treatment by means of cold, so to speak. It can be integrated into the so-called thermotherapies. As said before cold exposure has been used by people since ancient times. However, until the late 1980s, cold exposure remained relatively unappreciated by modern, allopathic medicine<sup>2</sup>. More recently, cold therapy has been increasingly used to prevent or mitigate various types of neurologic injury.

In cold therapy/practice the temperature difference between the body and its environment or a cold object is used to cool it down as a whole or only in certain places, which produces different effects that we will present later (benefits of cold exposure).

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<sup>1</sup> [Cold as a therapeutic agent](#)

<sup>2</sup> [Cold as a therapeutic agent](#)

There is a wide range of different treatments that would all qualify as “cold exposure (therapy),” which, at its core, is simply using cold temperatures to promote wellness. Right now the most famous cold exposure therapies are cryotherapy (cold therapy that subjects parts or all of your body to extremely cold temperatures for several minutes) and the Wim Hof Method. Where cryotherapy surrounds your body with temperatures well below -130 °C, the Wim Hof Method isn’t quite so extreme.

Unlike cryotherapy, which is only available in limited areas and may be prohibitively expensive for some people, cold water therapy and ice baths like Wim Hof is promoting it can be done at home or in nature. In this text, however, Cold Exposure only refers to showering or bathing below 15°C water temperature and not to cold air.

## **BENEFITS OF COLD EXPOSURE**

Basically, it can be said that cold showering/bathing has positive effects on health. Our entire body is crisscrossed by a network of fine and delicate blood vessels that, together with the heart, form the cardiovascular system. As soon as we get into the cold water, our blood vessels contract and the blood flow is inhibited. The body begins to divert blood away from parts of the body that are not immediately vital, so the arms and legs, which then start to tingle (you probably know this feeling). The body starts to collect the blood inside and concentrates entirely on supplying the heart, lungs, liver and kidneys and does everything it can to keep the core body temperature from falling below 35°C - which we would not survive for long.

In this way, it protects vital organs from the cold shock. To be even better equipped against the cold temperatures, it now also converts more energy into heat. The vessels dilate again very quickly and the blood circulates better. This cold-warm alternation strengthens blood circulation, stabilizes the circulatory system and keeps blood vessels healthy, so the cardiovascular system is strengthened.

Following we list four positive effects (just to name a few) regular cold exposure (< 15°C) has to the mind and the body:

- It reduces inflammation, swelling and sore muscles (it can speed up recovery after physical training)  
Exposure to cold temperatures raises adiponectin, a protein that combats inflammation.
- It regulates blood sugar levels  
One study found adiponectin levels increase by 70% after cold exposure. The protein adiponectin is also involved in blood glucose regulation, with low levels often found in insulin resistance.  
Cold exposure can also enhance the body’s response to insulin, allowing glucose to be cleared from the blood more efficiently<sup>3</sup>.
- It is linked to improved sleep quality, more focus, and an improved immune response  
Natural daily temperature variations are an important regulator of sleep cycles.
- It activates the brown fat tissue (BAT)  
Whilst white fat stores energy and comprises most body fat, brown fat is active in burning calories and using energy; it also can essentially turn calories from food into heat. Cold temperatures can lead to increased levels of adiponectin which increases fat burning.

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<sup>3</sup> [Cold Exposure Induces Tissue-Specific Modulation of the Insulin-Signalling Pathway in Rattus Norvegicus](#)

Furthermore, cold water tightens your cuticles and pores, which will prevent them from getting clogged (which is why we would also advise ending any hot shower with a cold shower.). On the contrary, hot water dries out the skin. That is why many people report that cold water has a positive impact on their skin and hair.

Last but not least cold bathing can be also recommended on a psychotherapeutic level, because it helps to reduce anxiety and prevent panic attacks. Since cold bathing can increase sleep quality this should be also taken into account when dealing with psychotherapy. Incidentally, scientists have also been able to identify a positive effect on the general mood of bathers: The temperature shock sets off happiness hormones. Also many people have noticed a huge increase in will-power from taking regular cold showers. Even though this benefit is anecdotal and not backed by scientific research it is an interesting and valuable side effect. One explanation could be that getting under or in cold water regularly trains the brain to do things it doesn't spontaneously want to. This attitude could then translate to other areas of your life.

### **HOW TO START - COLD SHOWERS**

If you are new to the topic of cold exposure, start with cold showers. This may sound tough, but you can start out very relaxed. In our opinion, it is easiest to start with an alternating warm-cold-warm-cold-warm-cold shower. To do this, you start with a warm shower, which can be as long as you like. Then turn the temperature control to cold and try to stay under the shower for 20-30 seconds. After that you can have a warm shower again for another 30 seconds. Now turn the temperature one more time down to cold again and stay under the shower for another 20-30 seconds. Repeat this one more time and finish with the cold shower. It is important to end with the cold shower so the body can adapt to it.

Another possibility would be to start directly with the cold shower. To get the body used to the cold, you can start by showering first over the feet, then over the legs, stomach, neck and back and finally over the face. Notice here that getting directly under the cold shower sometimes is easier because the body does not yet know the warm water. Be prepared to get a small initial shock, shiver a little and gasp for air when the cold water runs over you for the first time. Try to relax and breathe especially calmly. Help yourself by telling you that everything is okay or thinking about something nice, a good memory for example.

Over the following days and weeks, you can try to increase the "cold shower phases" and decrease the "warm shower phases" until you can shower without the warm water completely. Set a timer and just try to stand under the cold shower for a minute without taking a hot shower before or after. Increase the time until you can stand under the shower for 5 minutes straight. Don't worry, you won't die. You will feel great after your cold shower, this is for sure! The cold shower works like regular weightlifting, you will get stronger over time. Having regularly small stress responses is good for your body (as you know from the Stress\_LEC), but please start slow and be careful with changes in the breath and heart rates!

## **HOW TO CONTINUE - COLD WATER / ICE BATHING**

Important note: There are several contraindications for ice bathing which we will list below. Furthermore, your cardiovascular system should be in good condition. If you are unsure, please check with your doctor.

Contraindications:

- Fever
- Problems with the heart (e.g. angina pectoris, panic attacks)
- High blood pressure (>160 mmHg)
- Cold urticaria & cryoglobulinemia
- Raynaud's syndrome type 2 (with pre-existing blood vessel disease)

After you have mastered this first challenge and have become fond of the cold, you are ready for the next progression: The ice bath or swimming in the sea or a lake in winter. If you are lucky enough to live near a lake or a larger body of water, you can start taking a bath outside in end of summer/early autumn. Alternatively, if you have a bathtub, you can use it. But in the following I will refer to bathing in the water in the nature, because we have had very good experiences with it.

Wim Hof Instructor Josephine Worseck invented a rule of thumb for ice bathing newcomers: The 2-2-2-2 rule. With temperatures around 2°C take a maximum of 2 minutes in the ice bath, always go with the two of you, and not more than twice a week (Please keep this in mind while continuing reading).

In Germany the time between August and September is a good month to start bathing. The temperatures drop a little bit, but the water is still relatively warm from the summer. Get into the water and try to stay in one place. Shallow water is recommended, deep water can be dangerous especially at lower temperatures. Besides, still waters are more pleasant than flowing ones like rivers. We mostly prefer to sit upright on the knees in the shallow water and either put the hands flat on the thighs or cross my arms over my chest. Because the extremities cool down the fastest, the latter variant with the arms over the chest or the head is recommended especially in lower temperatures. The hands do not come into contact with the water and therefore stay warm. Your companion will set a timer as soon as you are calm in the water. Please start slow with 1-2 minutes and increase the time over the next few weeks when you feel comfortable. Pack warm and especially comfortable clothes, which you can slip into very quickly after the bath. Hot tea and tasty cookies are also recommended. Over the coming weeks and months, you can go bathing in the lake or sea once or twice a week. Even though it is getting colder and colder outside, and the water temperature is decreasing, you are giving your body and mind the chance to get used to the greater challenge. One could speak here as in physical training of a progressive overload (read Theoretical Training\_DOC).

When you go into the water, it is not bad at first. But from the height of the genital area and the belly you automatically start to gasp for air and breathe hectically. Relax as much as you can and try to breathe slowly and evenly. Then go under water with the whole upper body up to the shoulders. If the outside temperature is not too low yet, you can also dive your head under water at the beginning or at the end. In winter, however, this is no longer recommended, and you should wear a cap. As the feet

also cool down very quickly, neoprene socks/neoprene shoes are recommended at temperatures below 5 degrees.

If you want to make a ritual out of the bathing process we can also recommend to start with some conscious breathing outside to excite the nervous system and rest of the organism. You will be also better prepared for controlling your breath when going into the water because you just focused on it before already. When going out of the bath, as already mentioned, hot tea and cookies with your buddy are a nice finisher.

## **THE 4 ZONES OF COLD WATER BATHING**

For me (Daniel), and I believe for a lot of other people as well, the cold water bathing can be divided into three to four overlapping time zones:

### *Zone 1 – The Panicking Zone*

Initial shock, grasping for air, screaming voices in your mind, this is the zone where most people are afraid of. Duration: The first one to approx. 30 seconds; approaches zero for more experienced people.

### *Zone 2 – Breathing/Overcoming the Cold Zone*

Slowly concentrating on your breath, calming your mind, strengthen a positive attitude towards the cold, this is where you are getting used to the cold. Entry time: after zone 1 and takes up 15-90s, sometimes more, depends heavily on the environment and your emotional and physical wellbeing that day.

### *Zone 3 – Calmness Zone*

Breathing focus slowly diminishes, you are entering a state of just being there, the cold is not unpleasant anymore. Entry time: After zone 2 and takes up 30/45s – infinite; entering this zone always results in having a positive experience towards the cold water exposure.

### *Zone 4 – Internal Peace Zone*

No focus on your breathing, feeling empty, your mind is like a clear blue sky in the summer. Entry time: after zone 3 and you only manage to reach this zone sometimes; I've entered this zone only a handful of times, this zone is beyond mediation.

Now as you are aware that certain mental/body states exist, really try to get to Zone 3. Going into the water and staying there for the first minute is hard, but believe me, it gets better.

After your timer beeps, leave the water and although you might feel unstoppable, warm and happy, dry off quickly and put on warm clothes. Now, you will blush all over because the outer layers of your skin will be supplied with blood again. After you have put on your clothes, you may feel cold for a short time, this is called the after drop. Then go into the warm and/or move yourself to get back to your normal body temperature.

The cold is a merciless teacher, but it is definitely worth it. The feelings you feel in the water and after bathing trump pretty much everything. Really, this is unique. Now you will also notice that you have become more resistant to the cold and in the future you don't mind if the warm water in your shower doesn't work (which is one more step into the direction of freedom).

Important note: Please be mindful that you are doing these exercises on your own risk. Especially when bathing in open waters you should not overdo it and only slowly approach your limits. Also ALWAYS go with another person and if you're only two then one goes into the water, then the other. Be aware that cold bathing (especially in the beginning) is a lot of stress for your body, so also take care of it afterwards.

### **WHY ARE PEOPLE DOING THIS?**

While most people associate ice bathing with positive health effects (see benefits), there is so much more. From our experience, some ice bathing sessions were a couple of ice bath sessions far surpassed our best meditation experiences. Cold exposure is grounding, removes the stress and is a great mood booster. Daniel says „I am pretty sure that my time at Corona Lockdown would have been worse if I hadn't gone swimming with one good friend of mine every Sunday". Last but not least, cold bathing can be a social event. No matter if you prefer bathing with a friend or in a bigger group, social connections to other people is a big part of what defines us as humans.

So we hope that you could explore what cold exposure (here especially bathing) is, a bit of the science behind it, ways to practice it, and important precautions.

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Following you will find some scientific resources on the topic of Cold Exposure:

Science Direct - Cold Exposure

<https://www.sciencedirect.com/topics/nursing-and-health-professions/cold-exposure>

NetDoktor - Kryotherapie (German)

<https://www.netdoktor.de/therapien/kryotherapie/>

NCBI - Cold Therapy in Migraine Patients: Open-label, Non-controlled, Pilot Study

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1697736/>

NCBI - Cold and compression in the management of musculoskeletal injuries and orthopedic operative procedures: a narrative review

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3781860/>

NCBI - Whole-body cryotherapy: empirical evidence and theoretical perspectives

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3956737/>

PubMed - Immune system of cold-exposed and cold-adapted humans

<https://pubmed.ncbi.nlm.nih.gov/8925815/>