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| **Titel** | What Is Health-Oriented Sauna Bathing? |
| **Subtitel** | Why heat, controlled cooling and recovery belong together – and why repetition matters more than intensity |
| **Author** | Dr. Karsten Gröning |
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**Short answer:** Health-oriented sauna bathing is not defined by the hottest cabin, the strongest Aufguss or the coldest plunge. It is a complete three-phase procedure: heat, controlled cooling and recovery. The warm phase creates a limited thermal stimulus; cooling then returns the body toward thermal balance, preferably progressively through fresh air, showering and—where appropriate—a brief cold-water immersion; recovery allows cardiovascular, fluid and autonomic regulation to stabilise before another cycle begins. The long-term training principle is repeated, recoverable exposure. Adaptation is driven more plausibly by regular repetition of moderate stimuli than by occasional extreme stress.

A sauna bath is often reduced to the time spent inside the hot cabin. Physiologically, that is incomplete. The Finnish sauna is a heterothermal, or alternating-temperature, bathing procedure. The hot room provides only the first stimulus. A complete health-oriented sauna cycle consists of three functionally different phases: heat, cooling and recovery.

This distinction matters because the objective is not to endure the greatest possible thermal stress. The objective is to expose the organism to a controlled stimulus, return it toward homeostasis and allow sufficient recovery for the stimulus to be processed. Only then does repetition become a plausible adaptive training principle rather than an accumulation of thermal and circulatory strain.

## The three phases of a health-oriented sauna bath

The Academy describes the health-oriented sauna bath as a sequence of three phases:

- 1. WARM – a limited dry-hot exposure that raises skin temperature, redistributes blood toward the skin, increases heart rate and activates sweating.
- 2. COLD – progressive removal of stored heat, beginning with fresh air and followed by water applications; a cold-water plunge is an optional final cold stimulus for suitable bathers.
- 3. RECOVERY – a thermally neutral period in which circulation, breathing, fluid balance and subjective state can stabilise before another cycle.

These phases are not interchangeable accessories. They perform different physiological tasks. Heat challenges homeostasis; cooling reverses part of the accumulated heat load; recovery completes the return toward a stable starting condition.

## Phase 1: Warm – a controlled heat stimulus

During the warm phase, the body receives heat by convection and thermal radiation while metabolic heat production continues internally. Skin vessels dilate, skin blood flow increases and sweating is activated. Heart rate commonly rises because the circulation must support both systemic blood pressure and the greatly increased demand of the skin circulation. [1–4]

In a classic dry-hot sauna, the low water-vapour pressure permits sweat to evaporate and therefore provides an important route of heat loss even while the environment is hotter than the skin. Core temperature nevertheless rises progressively when heat gain exceeds heat loss.

For health-oriented practice, the relevant endpoint is therefore not a predetermined number of minutes and certainly not maximum discomfort. The heat exposure should be long enough to produce a clear thermoregulatory response but short enough to remain readily reversible. Academy teaching commonly uses approximately 8–12 minutes as an orientation for the warm phase, with individual tolerance, climate, body position and Aufguss intensity modifying the actual dose.

## More intensity does not mean more adaptation

A central misunderstanding in modern sauna culture is the assumption that a stronger stimulus must produce a greater health effect. Physiology does not support such a simple linear model. Adaptation to environmental stress follows a dose-response relationship: an insufficient stimulus may produce little response, an appropriate stimulus can activate regulatory and protective mechanisms, and excessive stress can exceed the body's compensatory capacity.

Heat acclimation research and the sauna literature support the importance of repeated exposure. Regular heat exposure can alter thermoregulatory and cardiovascular responses, including sweating, plasma volume, skin circulation and heat tolerance. The evidence does not establish that occasional extreme sauna sessions are superior to moderate sessions. Reviews of sauna bathing instead repeatedly point to regular exposure as the relevant long-term pattern. [2–5]

The Academy therefore formulates the principle more precisely: the decisive training variable is not the intensity of a single peak stimulus, but the repeated application of a stimulus that can be completely processed and recovered from.

## Repetition is useful only when recovery is complete

Repetition alone is not automatically training. If a second sauna cycle begins while the bather remains overheated, dehydrated or circulatorily unstable, the next exposure starts from a reduced physiological reserve. Repeated incomplete recovery can therefore accumulate strain rather than build adaptation.

A health-oriented cycle follows a different logic: stimulus → cooling → recovery → renewed stimulus. This rhythm gives the organism an opportunity to restore thermal balance, venous return, fluid distribution and autonomic stability before the next challenge. The long-term adaptation is produced by the repeated cycle, not by making one individual cycle as severe as possible.

## Phase 2: Cold – cooling should begin gradually

Leaving the sauna does not end the thermal exposure. Skin and core temperature remain elevated, cutaneous vessels are still dilated and sweating continues. The purpose of the cooling phase is to remove excess heat and progressively reverse the warm-phase response.

For health-oriented practice, the Academy recommends a sequence from less intense to more intense cooling: first fresh air, then showering or controlled cold-water application, and only afterwards—if desired and individually appropriate—a brief cold-water immersion.

This sequence is physiologically sensible because the transition from marked heat-induced vasodilation to intense cold-induced vasoconstriction can otherwise be abrupt. Older experimental work on sauna cooling already suggested that gradual cooling may be preferable to abrupt contrast cooling in people with unstable blood-pressure regulation. [6]

## Step 1: the fresh-air bath

The first cooling step is simple: leave the hot cabin and spend a short period in cooler fresh air. Heat loss immediately increases through convection and radiation, while evaporation from the sweat-covered skin continues. Breathing cooler air is also subjectively relieving.

Fresh-air cooling is gentle compared with cold water because air transfers heat far less efficiently than water. It therefore begins the reversal of heat storage without immediately imposing a maximal peripheral cold stimulus. The bather should breathe normally and move calmly rather than treating the cooling phase as a competition.

## Step 2: showering and controlled water cooling

After the first air-cooling phase, water can remove heat much more effectively. A shower also removes sweat before any communal plunge pool is used. In health-oriented practice, cold-water applications are controlled rather than abrupt: water is applied progressively, traditionally beginning at areas distant from the heart and moving toward the trunk.

The objective is not to produce pain, gasping or prolonged shivering. Cold water rapidly cools the skin and causes cutaneous vasoconstriction, increasing peripheral vascular resistance. The cardiovascular response therefore differs fundamentally from the vasodilated state in the hot sauna.

## Step 3: the cold-water plunge – optional, brief and intense

A cold-water immersion can follow air cooling and showering for experienced, suitable bathers. Water is an efficient heat-transfer medium, so even a few seconds can produce a pronounced thermal and vascular stimulus. Academy teaching commonly encounters plunge pools in approximately the 8–15 °C range.

The plunge should not be confused with the purpose of cooling as a whole. It is the most intense component, not the mandatory definition of successful cooling. The head is not deliberately submerged, entry should be controlled, breathing should remain calm, and the bather leaves before marked shivering develops.

Recent experimental evidence reinforces an important point: cold-water immersion can substantially accelerate cooling after sauna. In a 2026 crossover study, adding 90 seconds of 20 °C whole-body immersion to an air-cooling break between two 15-minute sauna exposures resulted in a lower core temperature and heart rate at the end of the second sauna bout than air cooling alone. [7] That demonstrates the effectiveness of water cooling; it does not mean that colder or longer immersion is automatically better.

## Cooling is not a second endurance test

The cold phase has sometimes acquired the same escalation logic as the Aufguss: colder water, longer immersion and more dramatic contrast are interpreted as greater effectiveness. That confuses stimulus intensity with physiological purpose.

Cold water causes rapid vasoconstriction and can provoke an acute respiratory and cardiovascular response. The aim after sauna is to remove excess heat and restore regulation, not to replace heat

stress with maximal cold stress. A brief, controlled cold stimulus is sufficient; severe discomfort, uncontrolled gasping or persistent shivering indicate that the exposure has exceeded the intended dose.

## Why the order fresh air → shower → plunge makes sense

The sequence creates a graded increase in cooling power. Air has relatively low heat-transfer capacity. Flowing water removes heat much faster. Immersion exposes a large body surface simultaneously and therefore produces the strongest cooling stimulus.

This gives the sequence a clear physiological logic:

- Fresh air begins heat removal while allowing continued sweat evaporation.
- Showering increases heat loss and cleans the skin while permitting controlled, regional dosing.
- Cold-water immersion, if used, provides a short whole-body cooling stimulus after the initial thermal load has already begun to fall.

The progression is therefore not ritual for ritual's sake. It moves from a relatively gentle cooling medium toward a much more powerful one.

## Phase 3: Recovery – the neglected third phase

After cooling, the sauna cycle is still not complete. The organism has just undergone marked changes in skin blood flow, sweating, heart rate, vascular resistance and body temperature. Recovery provides time for these variables to move toward a stable state.

The recovery phase should be thermally comfortable and unhurried. The bather rests, breathing and heart rate settle, thirst can be addressed and the subjective response to the completed cycle can be assessed. This phase is especially important before deciding whether another sauna cycle is appropriate.

The Academy's thermophysiological model emphasises that regular sauna is adaptive only when heat stimulus and physiological restoration belong together. Without adequate cooling, rehydration and rest, repeated heat exposure can instead produce cumulative dehydration and declining circulatory reserve.

## The health-oriented sauna cycle

The complete sequence can therefore be written very simply:

WARM → COLD → RECOVERY → repeat only after recovery.

The simplicity of this sequence should not obscure its physiological sophistication. Each phase deliberately changes the direction of heat flow and vascular regulation. The warm phase creates controlled heat storage and vasodilation. Cooling removes heat and promotes vasoconstriction. Recovery allows the cardiovascular, thermoregulatory and fluid systems to settle before the next stimulus.

## Why regular moderate sauna is more plausible than rare extreme sauna

Adaptation is a biological response to repeated manageable disturbance of homeostasis. This principle is familiar from exercise physiology and environmental acclimation. The organism does not become better regulated because one isolated stimulus was exceptionally unpleasant. It adapts when a meaningful stimulus recurs often enough, with sufficient recovery between exposures.

Sauna research is consistent with this principle. Repeated sauna use is associated with heat acclimation and altered cardiovascular and thermoregulatory responses, while observational studies reporting long-term associations with cardiovascular outcomes concern habitual sauna use rather than isolated extreme sessions. [2–5]

This distinction is important: observational associations cannot prove that a particular number of sauna sessions causes a particular health outcome, and optimal frequency and duration remain incompletely established. What can be stated physiologically is that adaptation requires repetition, whereas excessive acute stress is not a prerequisite for adaptation.

## A stronger Aufguss is therefore not a better sauna bath

This principle also changes how Aufguss should be evaluated. An Aufguss can temporarily intensify the heat load by raising water-vapour pressure, reducing evaporative cooling and increasing heat transfer at the skin. That can be a pleasant and characteristic part of sauna culture, but intensity itself is not evidence of greater health value.

Longer Aufgüsse, larger water quantities and stronger air movement can all increase the acute stimulus. Once the stimulus is sufficient to activate the desired thermoregulatory response, further escalation mainly reduces the remaining physiological reserve. For a health-oriented sauna, controllability and repeatability are therefore more important than maximum intensity.

## Who should be cautious with strong heat–cold contrast?

Healthy, sauna-acclimated adults generally tolerate conventional sauna bathing well, but heat and cold both produce substantial cardiovascular responses. People with unstable cardiovascular disease, poorly controlled blood pressure, a tendency to syncope, acute illness or other relevant medical conditions require individual medical assessment rather than a generic heat–cold prescription. [1,6]

Alcohol is particularly incompatible with a health-oriented sauna procedure because it can impair judgement and cardiovascular regulation. The same principle applies whenever dizziness, nausea, unusual weakness, chest symptoms, marked palpitations or instability occur: the correct response is to stop the exposure, not to complete a ritual at all costs.

## The central principle

Health-oriented sauna bathing can be reduced to one physiological idea: adaptation is built by repeated, recoverable stimuli.

The warm phase should be strong enough to activate thermoregulation but not designed as an endurance test. Cooling should remove accumulated heat progressively—fresh air first, then water, with a brief plunge only when appropriate. Recovery should restore a stable condition before another cycle begins.

The quality of a sauna bath is therefore not measured by the highest temperature, the longest Aufguss or the coldest plunge. It is measured by whether heat, cooling and recovery form a controlled cycle that can be repeated without progressively exhausting the body's regulatory reserve.

## Conclusion

A health-oriented sauna bath is a three-part procedure: WARM – COLD – RECOVERY. The hot cabin initiates the stimulus, but it is not the whole bath. Cooling and recovery are equally important because they return the organism toward thermal and circulatory balance.

The decisive long-term principle is not maximal stimulus intensity. It is regularity: a moderate stimulus, fully processed and recovered from, can be repeated. Through repetition, the body has the opportunity to adapt its thermoregulatory and cardiovascular responses.

In practical terms: heat deliberately, cool progressively, recover completely—and repeat the cycle only when the body is ready.

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Editorial note: This article describes the health-oriented teaching model of the International Sauna Academy. It is intended for scientific and educational information and does not replace individual medical assessment. The appropriate intensity, duration and cooling method depend on health status, acclimation, sauna climate and individual response.